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"THERE'S A WIRE LINE THAT JUST WON'T GIVE UP"

FROM THE DAILY REPORT OF A TIGER BRAND WIRE LINE ENGINEER

Heard that the Smith-Ferry outfit needed a new line, and hurried out to their location—but the rumor was false. In fact the Superintendent said it looked like they were "fixed" with lines for some time.

"Now there's a line," and we walked over to the draw-works, "that just won't give up—why we've even forgotten its total ton-mileage."

The super thanked me for driving out and said his next length of line would also be American Tiger Brand.

Bill

IF you figure you're not getting the right service out of your wire lines, call in an American Tiger Brand Wire Line Engineer — these men know how to help you stretch your wire line dollar. And they should know—they're right in the field—they run across all sorts of situations every day. They live and breathe problems such as you might have. They know how much punishment a wire line has to take, and how the men on the job can lengthen wire line life.

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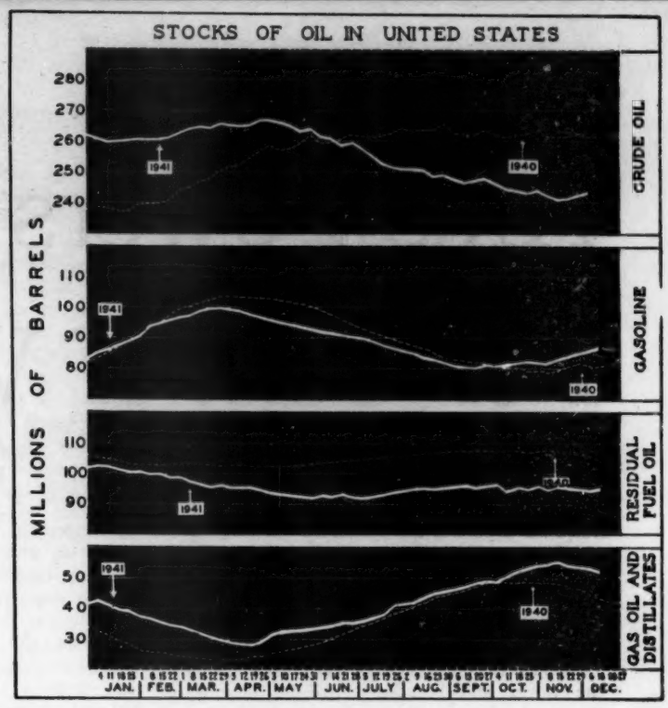
Trends

War Hastens Actions Involving Production And Refining Program



DAILY developments are answering the questions of producers and refiners as to how a full-scale war will affect their operations. Probably of greatest significance this week was OPC's approval of a plan of control for California producing operations. This plan was developed by the industry's production committee for District 5 and continues many features of the voluntary program previously in effect in California with administration centering in a committee representing the operators.

CRUDE PRODUCTION *4,111,550 bbl. daily average—up 7,835 bbl. One year ago 3,574,760 bbl.*

CRUDE STOCKS *244,200,000 bbl. as of December 6—up 1,316,000 bbl. One year ago 261,652,000 bbl.*

GASOLINE STOCKS **87,422,000 bbl. as of December 13—up 1,066,000 bbl. One year ago 81,411,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *95,762,000 bbl. as of December 13—up 420,000 bbl. One year ago 103,318,000 bbl.*

GAS OIL AND DISTILLATES *52,809,000 bbl. as of December 13—down 1,137,000 bbl. One year ago 45,198,000 bbl.*

REFINERY RUNS *3,997,000 bbl. daily week ended December 13—up 52,000 bbl. One year ago 3,495,000 bbl.*

*Includes 7,280,000 bbl. aviation motor fuel, down 13,000 bbl. One year ago 6,332,000 bbl.

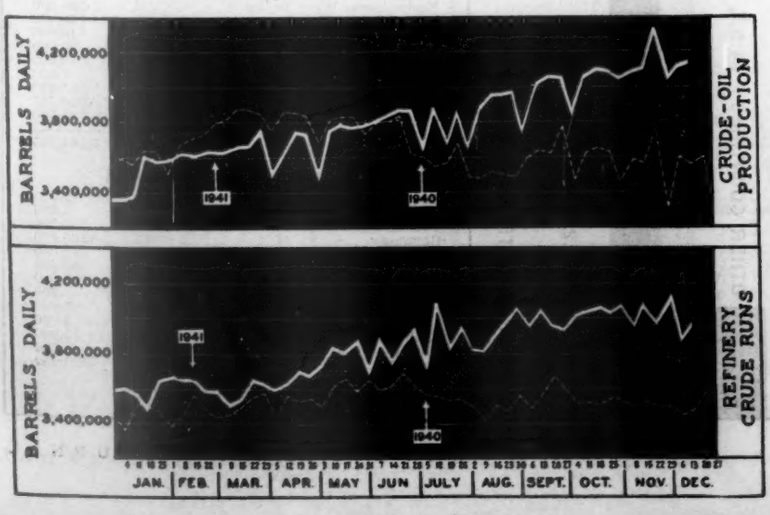
The plan provides for supervision by OPC's production department including both the Washington and Los Angeles offices and incorporates the conservation and war-aid features which the Government has stated are essential at this time. The petroleum coordinator has also made what appears to be a final request, to Illinois officials in regard to a conservation program for that state. It has been indicated that unless that state immediately provides for control similar to that of other states, OPC plans to take the matter in its own hands and work out a program similar to that of California under the direction of the industry's committee for District 2 of which Illinois is a part. OPC's representatives have expressed dissatisfaction with Illinois' progress along oil conservation lines in recent weeks.

The major development reported having a bearing on the production of 100-octane gasoline was an order which gives OPC control over the disposition of blending materials and oil and gas products used in the production of aviation gasolines. It is understood that this is part of the Government's program to direct these operations of refineries and natural-gasoline plants with the objective of speeding-up plans to more than treble the present output of 100-octane gasoline. This development following the restrictions placed on the use of tetraethyl lead, announced earlier in the month, will tend to reduce further the octane ratings of gasoline available to civilians. Washington reports indicate that important changes in the industry's water transportation facilities are in the making due to the war. The only development so far is the curtailment in the tanker movement on the Pacific Coast which if continued will mean shortages for areas dependent on California for supplies. This situation is believed to be temporary.

Operators were encouraged by the clearance given the industry by the Department of Justice relative to the enforcement of the antitrust acts in carrying out of the California plan and other cooperative programs that have been inaugurated since this country's entry into the war. This approval was promised at the time the emergency oil program was started last summer under a clearance procedure agreed upon by OPC and the Department of Justice.

DAILY AVERAGE PRODUCTION FOR WEEK

	Dec. 13, 1941	Bur. Mines Dec. est. of demand	December state allowables	Dec. 6, 1941
Arkansas	73,590	76,500	76,300	73,965
California	665,250	635,800	613,200	643,750
Eastern fields	110,850	116,600	.....	113,350
Illinois	384,195	426,500	.....	399,500
Kansas	255,950	260,700	264,000	240,700
Louisiana	357,695	340,000	354,705	359,735
North Louisiana	*81,695*	.....	.....	*81,485*
Louisiana Gulf Coast	*276,000*	.....	.....	*278,250*
Michigan	56,890	52,300	60,000	53,120
Mississippi	75,535	60,300	.....	74,655
Nebraska	5,200	6,100	.....	5,900
New Mexico	118,580	116,100	117,000	117,680
Oklahoma	415,975	460,000	428,000	418,250
Rocky Mountain states	112,940	108,400	.....	110,960
Texas	1,478,900	1,479,700	1,555,192	1,492,150
East Texas	*369,250*	.....	.....	*369,300*
West Texas	*290,800*	.....	.....	*289,300*
North Central Texas	*139,100*	.....	.....	*139,050*
East Central Texas	*84,300*	.....	.....	*86,650*
Texas Panhandle	*87,800*	.....	.....	*99,150*
Texas Gulf Coast	*412,500*	.....	.....	*414,000*
Southwest Texas	*95,150*	.....	.....	*94,700*
Total United States	4,111,550	4,139,000	.....	4,103,715
Total production, Jan. 1-Dec. 13, 1941		1,323,366,150 bbl.		
Same period last year		1,279,288,670 bbl.		



Axis Powers Control But Four Per Cent of World's Oil

By C. O. WILLSON

THE formal declaration of war between the United States and Axis powers brought all but a small part of the petroleum industry directly into the world conflict. The nations at war account for 85.5 per cent of the world's production of crude oil and synthetic petroleum products and their refineries supply more than 97 per cent of the products of petroleum.

Because the war has spread to all parts of the world and because petroleum is one of the most essential products, the marketing of every barrel of petroleum will be determined by war conditions regardless of where it is produced or refined. At this time the Allied nations are giving as much attention to the protection of oil in several neutral countries as they are to the output within their own boundaries.

The accompanying table and charts were prepared to give a quick summary of the strength of the Allies and the Axis powers at the start of the most widespread war in all history following a 28-month conflict in which the Western Hemisphere was not involved as a belligerent except for units of the British and Netherland empires.

Axis Position

The outstanding situation revealed in the tabular review is that the Axis, so far as petroleum is concerned, is a combination of weakness, a condition which will not change unless the three powers—Germany, Italy and Japan—succeed in taking over important oil areas now strongly held by the United States, Great Britain, Netherlands and the Soviet Union. In this analysis the Axis powers and the nations under their control are credited with 4.1 per cent of the world's oil and 9.2 per cent of the refinery capacity. Both percentages include the production of petroleum substitutes. With petroleum operations one of the most closely guarded military secrets, data on Axis output are estimates based on known conditions before the war started and later reports from several sources.

The output credited to the Axis is believed to be a maximum rather than a minimum figure. However, if the production totals were expanded 25 to 50 per cent they would not materially change a situation in which Germany and Italy, now joined by Japan, have carried on a war for more than 2 years faced with the certainty of a serious petroleum shortage unless new supplies can be acquired from sources now controlled by the Allies.

Germany started the war in September, 1939, with approximately 14,000-bbl. daily crude-oil production within her own borders and possibly twice that quantity of synthetic petroleum products. Her refining capacity totaled 68,000 bbl. daily. While more than 40 refineries were listed in her industrial reports at that time, most of these were small finishing plants which would not be considered refineries in this country. Most of the larger plants were operated with imported crude oil, a large percentage of which came from fields of the Western Hemisphere. Germany then was dependent on outside sources for more than 75 per cent of her petroleum supplies. Since 1939 there has been some increase in Germany's crude-oil production and Allied military circles estimate the production of synthetic petroleum products at approximately 100,000 bbl. daily.

Polish Supply

In her immediate invasion of Poland, Germany divided with the Soviet Union the 10,000-bbl. production of that country whose small refineries had sufficient capacity to refine the crude-oil output of the fields. This summer through invasion all of Poland's oil resources were added to those of the Axis. In her western invasion of May and June, 1940, Germany acquired 29 refineries with a capacity of 180,000 bbl. daily from Norway. the Low Countries and France. The

DIVISION OF PETROLEUM PRODUCTION AND REFINING AMONG THE WARRING NATIONS

PRODUCTION
Summary (Data in barrels)

	Daily production	Per cent
Allies	5,298,100	81.4
Axis	267,000	4.1
Other countries	948,600	14.5
	6,513,700	100.0

Allies and Allies-Controlled

Country:	Daily production‡
Bahrein Island	19,700
Canada	27,500
Egypt	20,900
British India—Burma	28,000
Iran	180,000
Iraq	20,000
Netherland East Indies	172,000
Saudi Arabia	12,000
Trinidad	58,000
U.S.S.R.	610,000
United States	4,150,000
Total	5,298,100

Axis and Axis-Controlled

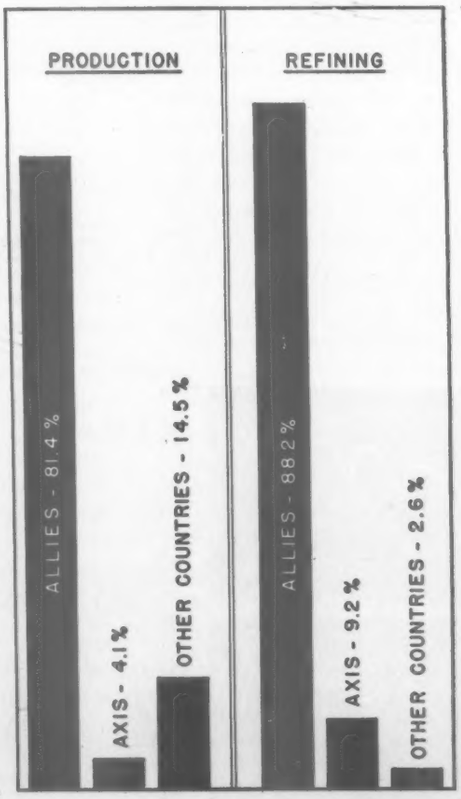
France	1,200
Germany	*126,000
Hungary	9,000
Italy and Albania	3,800
Japan	†22,000
Rumania	105,000
Total	267,000

*Includes estimated 100,000 bbl. daily production of synthetic petroleum. †Includes estimated 11,000 bbl. daily output of synthetic petroleum.

Other Countries

Argentina	59,000
Colombia	58,000
Ecuador	4,600
Mexico	116,000
Peru	30,000
Venezuela	681,000
Total	948,600
GRAND TOTAL	6,513,700

‡Latest report available.



REFINING
Summary (Data in barrels)

Country:	No. of plants	Daily capacity	Per cent
Allies	681	7,164,365	88.2
Axis	185	738,365	9.2
Other countries	45	220,975	2.6
Total	911	8,123,705	100.0

Allies and Allies-Controlled

Country:	No. of plants	Daily crude oil capacity
Australia	3	4,100
Bahrein Island	1	32,500
Canada	54	229,600
Cuba	1	4,200
Egypt	2	17,000
Burma	7	37,000
Iran	3	333,000
Iraq	2	4,000
Netherlands West Indies	3	505,000
Netherlands East Indies	7	160,000
Palestine	1	40,000
British East Indies	1	20,000
Trinidad	7	79,300
Union of South Africa	1	1,000
United Kingdom	18	133,450
United States	550	4,926,715
U.S.S.R.	19	637,500
Total	681	7,164,365

Axis and Axis-Controlled

Belgium	7	12,175
Denmark	1	500
France	19	151,500
Germany	47	*168,770
Hungary	7	11,670
Italy	10	57,300
Japan	17	†63,000
Latvia	1	200
Libya	1	2,000
Manchukuo	1	3,000
Netherlands	1	15,000
Norway	1	1,200
Poland	19	23,050

(Continued on Opposite Page)

crude-oil production of these countries was less than 2,000 bbl. daily. No attempt has been made to operate most of these refineries which in peacetime obtained their crude oil from countries outside Continental Europe. Germany, however, did obtain substantial petroleum supplies in storage through this invasion.

Italy, which entered the war at that time, was even more dependent than Germany on petroleum supplies outside her own boundaries. Crude production totaled a few hundred barrels daily with less than 4,000 bbl. daily available from Albania which Italy now controls through invasion. Before her entry into the war a large part of the crude oil for Italy's 10 refineries and her imports of finished products, came from the Western Hemisphere and Rumania.

In the Balkan invasion, Germany and Italy acquired their only important oil stake so far in this war. Rumania's crude-oil production of 125,000 bbl. daily and 48 large and small refineries were taken over practically intact. In peacetimes Rumania's petroleum output in excess of domestic needs totaling approximately 75,000 bbl. daily, was transported by water to European markets.

While the inland transportation of this petroleum has presented many problems, Rumania's petroleum has strengthened the fuel position of Germany and Italy and many military observers state these new supplies made possible the Russian invasion now in its sixth month.

Japan's Petroleum Position

Japan's position in regard to petroleum is similar in many respects to that of Germany and Italy. In recent years Japan has been dependent on shipments from the United States, the East Indies and the Persian Gulf area for 80 to 90 per cent of her oil. These shipments were stopped in July through embargo actions of the United States, Great Britain and Netherlands.

No information has been released regarding petroleum operations in Japan over the past year. The estimated production of 24,000 bbl. daily in the accompanying table includes crude oil, shale oil, and synthetic petroleum products. The total output is in excess of many estimates. Japan 2 years ago announced plans to increase her production of petroleum substitutes to 35,000 bbl. daily, but it is now certain this program has only been partially carried out. Japan has 17 petroleum refineries with a total capacity of 52,000 bbl. daily. The reports on current output indicate that Japan at this time is not producing from all sources more than 20 per cent of her minimum military and civilian petroleum requirements. She has been drawing on her storage, the total of which is unknown, since August 1.

The estimated total output of 267,000 bbl daily of crude oil and substitutes credited to the Axis at this time is 4.1 per cent of the world's petroleum supply. Costs in the production of this oil run far ahead of the average figure for the rest of the world. The daily crude capacity of 185 refineries in the Axis area is 627,365 bbl. daily to which is added 111,000 bbl. daily which represents the estimated output of synthetic plants. The difference between crude-oil production and refinery capacity of 360,365 bbl. daily is accounted for by refineries which are either shut down or are operated part time.

Axis Demand

Because there is little information available as to the storage of crude oil and products and the changes that have taken place since the war started, estimating the Axis petroleum consumption is more difficult than the determination of supply.

The Axis is now in control of Continental Europe with the exception of Portugal, Spain, Switzerland, Sweden and the Soviet Union. The 1939 petroleum consumption of the Axis-controlled area of Europe, exclusive of the war requirements of Germany, was approximately 450,000 bbl. daily.

The civilian use of petroleum in the invaded countries and in Germany and Italy has been reduced to those activities which contribute directly to the Axis war program. Estimates of the reduction in civilian consumption over the past year have been as high as 75 per cent. Others insist that a reduction of that magnitude would be impossible if the essential industrial, transportation and agricultural pursuits which are dependent on petroleum power are maintained. The latest reports estimate Japan's civilian requirements at 70,000 bbl. daily.

The military consumption of petroleum by Germany and Italy has changed with the activity of land and water forces. Estimates as to the average requirements in Russian offensive vary from 100,000 to 300,000 bbl. daily. It would seem that a figure of 200,000 bbl. daily for the Axis military consumption based on present operations would be conservative. Regardless of the estimates used for either production or consumption, it is apparent that the Axis minimum demands exceed current supplies. The difference has been made up through withdrawals from storage accumulated before the war started or acquired from conquered countries.

War commentators were in agreement that the necessity of quickly obtaining additional oil supplies was a primary motive in the Axis decision to invade Russia. The tide in that contest, at least temporarily, has turned in favor of the Soviet Union, which continues in possession of her principal oil properties with the limited oil reserves of Germany, Italy and Rumania reduced by many millions of barrels. The same commentators now suggest that the next German-Italian offensive will be directed toward the oil supplies of the Near East coupled with aid to Japan in her efforts to strengthen her oil position through the acquisition of the crude-oil production and refineries of the East Indies.

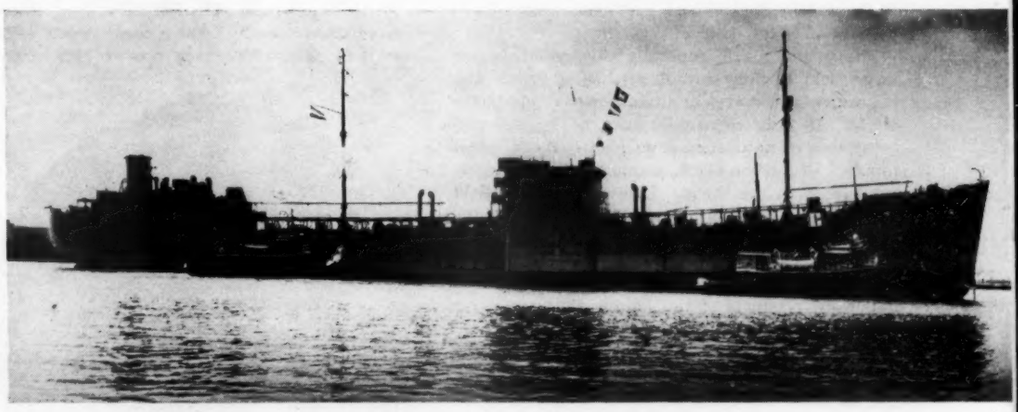
Oil for Allies

Little comment is necessary regarding oil available to the Allies. It exceeds many times any possible military needs of water, land and air forces and it is also sufficient to maintain industrial and other activities which support the military operations with large surpluses for normal civilian use. With the exception of Rumania, Argentina and Mexico, where oil properties of British and American nationals have been expropriated by the government, there are no important production and refining properties which are not controlled or operated by the Allied powers. This includes the production in neutral countries such as Venezuela, Colombia and Peru, where operations are carried on through subsidiaries of American, British and Netherlands companies.

Approximately 65 per cent of world crude-oil production, refining and established reserves can be credited to the mainland of the United States. Operating units of American companies have large production and refining facilities in South America, the East Indies and the Persian Gulf area. Operations within this country are particularly important in the matter of special products for military use. At this time refineries in this country are manufacturing all but a small percentage of the 100-octane gasoline used by Allied air forces. A program to more than treble this output is under way which will assure that thousands of fighting units in the air will have the fuel required for maximum performance. Special lubricants have also been developed. Specifications in diesel fuels which will have wide use in this war have been revised in line with military requirements.

While petroleum production within the British Empire is small, Great Britain has large oil resources which are either controlled directly by the government or are operated by her nationals. The government controls the Anglo-Iranian Oil Co., Ltd., which operates properties in Iran which rank fourth among the nations in oil production

(Continued on Page 82)



Allied tanker awaiting loading at Corpus Christi, Tex.

WAR DIVISION OF PETROLEUM REFINING

(Continued from Preceding Page)

Country:	No. of plants	Daily crude oil capacity
Rumania	48	224,200
Yugoslavia	3	4,800
Total	182	738,365

*Includes estimated 100,000 bbl. daily output of synthetic products. †Includes estimated 11,000 bbl. daily output of synthetic products.

Other Countries

Argentina	19	94,230
Belgian Congo	1	250
Bolivia	2	725
Brazil	3	6,460
Canary Islands	1	5,000
Chile	3	535
Colombia	2	14,500
Eire	1	600
Ecuador	3	7,350
Portugal	1	5,000
Spain	1	1,500
Sweden	1	3,500
Uruguay	1	5,000
Venezuela	9	76,325
Total	48	220,975

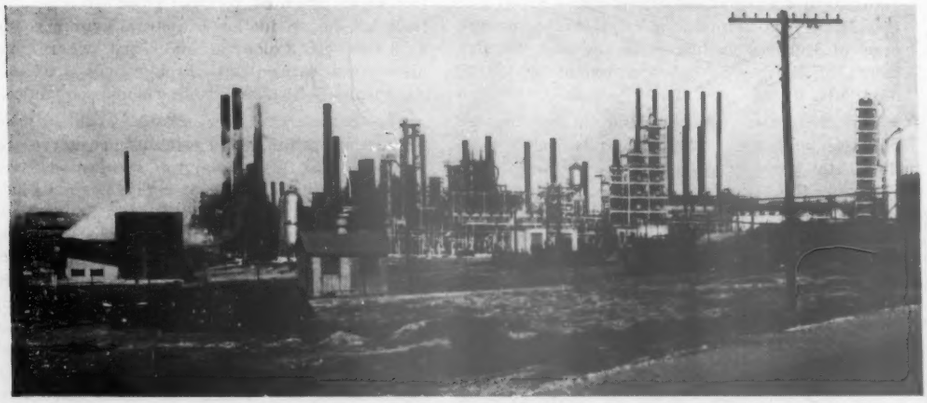
Activity in Texas Panhandle Maintains Upward Trend

By HARRY F. SIMONS

THE Texas Panhandle is closing one of its best years in recent history. General conditions have improved due to unusually favorable weather conditions. The oil industry in the region has been given an increase in allowable which, together with some success in reducing operating costs, has encouraged the companies to step out and do more drilling, to recondition old wells and to modernize some of the lease equipment. A greater market for natural gasoline and to a lesser extent for natural gas and carbon black have also made their effect felt.

The Panhandle is generally considered as one large field having several producing zones, and it has the largest area of any oil or gas field in the world. In this vicinity is also the largest concentration of natural-gasoline plants, the greatest number of carbon-black plants, and the largest gas supply in the world. Lines leaving the field carry gas to St. Paul, Minneapolis, Chicago, Detroit and numerous other cities and towns in Kansas, Missouri, Oklahoma and Texas. Liquefied petroleum gases and aviation gasoline are also important products of the Panhandle area.

From an oil-production standpoint, the Texas Panhandle has been a major influence for over 15 years. For the past 6 years it has been producing at the rate of approximately 2,000,000 bbl. monthly with the total production to date exceeding 400,000,000 bbl. of oil. Reserves total around 700,000,000 bbl. at this time which indicates that the total recovery in the area will exceed a billion barrels.



Right: Stacks in foreground mark "smokeless" carbon-black plant while smudge on horizon shows channel-process plant. Below: Largest refinery in the Panhandle has been repeatedly expanded in recent years

The Panhandle area includes large portions of Moore, Hutchinson, Potter, Carson, Gray and Wheeler counties. The oil-productive area varies from a mile to 10 miles in width while the gas producing area ranges from 10 miles to 40 miles wide. The field lies on the northern flank of a granite uplift, the Amarillo buried mountains. Productive limits on the southern flank of the field are determined to a great extent by faulting.

The oil production is obtained from three principal horizons, the white and the brown dolomites and the granite wash. These productive horizons have been further subdivided by geologists into five zones which include about 150 ft. of brown dolomite with low porosity; about 75 ft. of light buff dolomite with a porosity of from 0 to 15 per cent; as little as zero to as high as 300 ft. of white dolomite with porosity ranging from 0 to 20 per cent; from 0 to 800 ft. of gray arkose with variable porosity, and a zone which varies from 0 to over 4,000 ft. of red or pink arkose with varying porosity. The latter zone is Pennsylvanian while those above it are in the Clear Fork series of Permian age.

Most of the production from the field is obtained from near sea level. Surface elevation varies from 2,700 ft. to 3,500 ft. The actual thickness of producing zone varies with the position on the structure and profitable wells have been completed in not too thick pay horizons. The pay zones commonly run from 75 to 150 ft. thick. Generally the oil wells in the northern portion of the area are in the younger formations while those in the southern portion nearest the buried mountains are in the older formation. The gas production is also adjacent to the mountains.

The white dolomite was the first to attract attention in the area and was favored above the brown dolomite. In recent months the brown dolomite has been the objective of many wells drilled in the area. More recently, the granite wash has been coming in for considerable attention as the wells, when a pool is found, are generally good ones. Some in the area now feel that a succession of small granite wash fields will be discovered.

Recent Production History

At the present time there are over 5,200 wells listed as producing oil in the Texas Panhandle. The cause of increased activity in recent months is shown by the following table which lists the daily average allowed production and the number of producing days as given by the order of the Texas Railroad Commission.

Date	Allowed Production	Producing Days
February 1	86,861	22
March 10	87,545	26
April 1	88,068	26
May 1	87,303	27
July 1	89,339	26
September 1	91,856	26
October 1	114,259	22
November 1	116,766	22

The allowed production includes the oil in Moore County and in the Osborne field of Wheeler County. If a new order is not issued by the commission, the allowable for the previous month holds over.

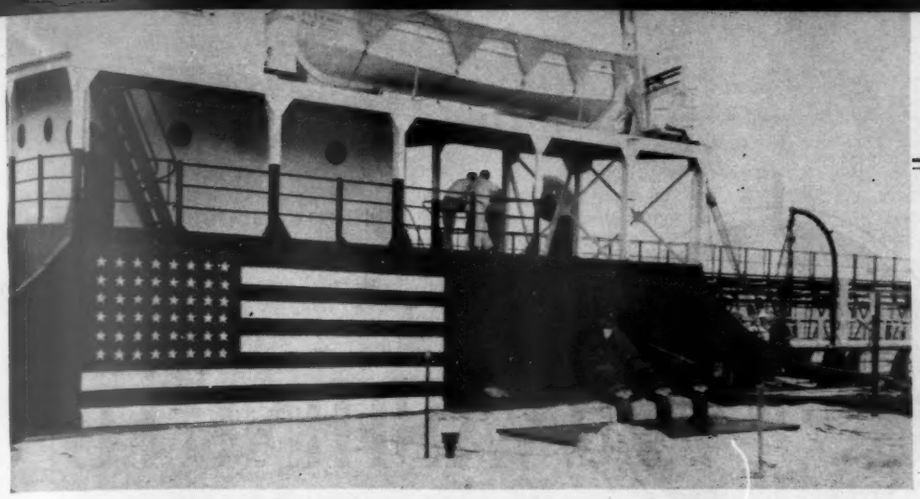
The above gives a daily average production, figured on a 30-day month, of around 85,000 bbl. Operators in the area are seeking even higher allowables and would like to get the figure up to around 100,000 bbl. daily. The actual demand at present is placed at 105,000 bbl. and it is expected that it will go to 125,000 bbl. Opinion on the total amount of oil the field can produce without waste varies from 150,000 bbl. to 300,000 bbl. daily.

The area has more than an ample outlet for its oil as there are a number of pipe lines leaving the field and there is a demand for 54,000 bbl. daily from the local refineries and these refineries could increase their throughput if more oil were available. Throughput of the various refineries is as follows:

Refinery and location	Throughput (Bbl.)
Danciger, Pampa	7,000
Danube, Borger	500
Heyward, Shamrock	600
Phillips, Borger	44,500
Shamrock, Sunray	3,000
Texas, Amarillo	7,000

There has been no recent expansion in oil pipe lines, but there is ample capacity available. At the present time, Humble Pipe Line Co. is the largest shipper running around 22,000 bbl. daily to Gulf Coast refineries. Magnolia Pipe Line Co. runs around 7,000 bbl. daily southward and Sinclair-Prairie Pipe Line Co. runs about 2,500 bbl. daily to Fort Worth. There are no refineries in the area which can be put in operation and storage is at a low unprecedented in recent years.

The crude averages 40° A.P.I. gravity and is all sour although it varies enough for some of it be called "sweet." The crude gives a high yield of



THE NEW SOUTHEASTERN PIPE LINE WILL BE DEDICATED FRIDAY OF THIS WEEK, WITH WASHINGTON OFFICIALS ON HAND TO TAKE PART IN THE CEREMONIES. HUGE HOSES HAVE BEEN CONNECTED ON PURE OIL CO. TANKER W. W. MILLS, AND A 78,000-BBL. CARGO OF GASOLINE GOES FROM BOAT TO NEARBY TERMINAL BEFORE TRANSMISSION INTO THE NEW PIPE LINE.

This Week...

Virtual control of the nation's aviation-gasoline producing facilities taken by the Office of Petroleum Coordinator. Authorized by the OPC and Department of Justice is pooling of base stocks, all other components, refining and storage facilities and exchange of any or all components as well as process patents.

●

Advance of 3 cents per barrel in 17 North and North Central Texas counties authorized by Leon Henderson, price administrator. Purchasers moved postings up by the authorized amounts. Producers protested that it was insufficient and leaves a 4-cent penalty on oil from those districts compared with comparable crude in Oklahoma and Kansas. Nation-wide study of producing costs continues.

Governor Phillips has reiterated his desire to retire from chairmanship of the Interstate Oil Compact when officers are elected at Oklahoma City, Okla., Friday and Saturday.

●

Seventeen more United States tankers have been returned from British shuttle service. Total returned is now 38, leaving approximately 40 still in British hands. Tanker Control Board considered moving 20 tankers to the Pacific to deal with contingencies of the war.

●

California oil men assembled Wednesday and heard details of the new conservation plan which has been approved by the Office of Petroleum Coordinator and the Department of Justice. Named to administer the plan is the Conservation Committee of California Oil Producers.

●

First general action of the Petroleum Industry Council for National Defense was appointment of subcommittee to determine the nature of preventable waste of petroleum and to report appropriate measures for its elimination.

●

Coordinator Ickes outlines specific duties of Petroleum Industry Council and the program of functions has received blessing of the Department of Justice. The council is authorized to consider all general problems related to petroleum's position in defense and make recommendations to the coordinator.

●

Petroleum conservation is specifically mentioned for consideration in the emergency session of the Illinois assembly convening December 18. Inclusion of this topic was specifically requested by Coordinator Ickes in a wire to Governor Green.

●

Nations now at war contain 85.5 per cent of the world's petroleum production and 97 per cent of the refining capacity.

●

Petroleum supplies for the Pacific Northwest, including Oregon, Washington and Alaska received special attention. Normally, the area is served by tankers from California refining centers, a system which may be disrupted by war with Japan. Committees were set to work analyzing requirements, supplies and other pertinent data. Californians think there may be rationing.

●

Engineers estimate recovery of crude from East Texas will be increased by 200,000,000 to 800,000,000 bbl., by adoption of the salt-water disposal and pressure-maintenance program that is in final stages of promulgation.

low-grade lubricating oil. If cracked it will yield around 65 per cent of 50-octane motor fuel which has a good lead susceptibility for that grade. Formerly some refineries objected to the crude because of its sourness, but these objections have been overcome.

In addition to the slight increase in total allowable, the inauguration on October 1, 1941, of a new system of using an acreage factor in computing the per well allowable also encouraged development on wider spacing. On the former basis marginal wells were often granted as much as the good producers which could make more oil. The allowable is now based on a 75 per cent flat well basis and a 25 per cent acreage basis. The basic unit is 10 acres with a tolerance each way of 10 acres. This means that a 20-acre well will receive the maximum allowable while a well on less than 10 acres will be given a smaller allowable.

A base of 19 bbl. is granted each well and the production allotted to the acreage factor added to this amount. The following table shows how it affects the production allotted to each well:

Spacing (acres)	Acreage Allowable
4.4- 6.0	3
6.1- 7.7	4
7.8- 9.5	5
9.6-11.2	6
11.3-12.9	7
13.0-14.7	8
14.8-16.4	9
16.5-18.1	10
18.2-19.9	11
19.9-20	12

Under the present system, the new production, which is practically all on 20 acres, is granted 31 bbl. per well daily. This is a distinct improvement over the previous system and it has encouraged the operators to expand.

The more encouraging outlook is reflected in the following table of completions in the Texas Panhandle since January of this year. Another fact stands out and that is the almost certainty of getting either an oil or a gas well. Note that out of 652 completions during the period, only 15 failures were recorded. This shows the carefulness with which the exploitation campaign in the area is conducted and also that the productive limits are well known.

SUMMARY OF COMPLETIONS TEXAS PANHANDLE

Month	Comp.	Oil	Gas	Dry	Initial Prod.
January	43	40	0	3	7,972
February	33	29	4	0	9,558
March	36	33	1	2	6,812
April	49	47	1	1	9,376
May	55	50	5	0	9,115
June	41	40	1	0	7,645
July	83	77	2	4	13,625
August	69	63	5	1	12,893
September	76	71	4	1	13,600
October	79	70	8	1	14,487
November	88	74	12	2	15,193
Totals	652	594	43	15	120,076

The principal increase in activity has taken place in the brown dolomite zone in Gray and Hutchinson counties. Some of the new wells are also in granite wash pools and there have been some white dolomite completions. Over the past 4 months the above counties have registered an average of over 30 completions monthly. Wheeler County has been reporting about five completions monthly while Carson turns in a scattered few. In Moore County the development principally is for gas and out of 16 wells completed in a 6-month period, all were gas wells.

While the drilling for gas has not been an important factor in the recent activity, the stronger position of the gas and gasoline industries has been a benefit to companies operating in the area. Gas production in the Panhandle is divided into the east and west fields with the latter producing both sweet and sour gas while the former produces only sweet gas.

The market for sweet gas is limited to some extent by the pipe-line outlets and the quantity required for fuel by the various plants and for lease use. There are 38 gasoline plants in the area which operate mainly on casinghead and sour gas. Average recovery of gasoline runs slightly under .56 gal. per 1,000 cu. ft. During October, the last month reported, 1,491,776,000 cu. ft. of gas was handled by gasoline plants with 828,320 gal. of gasoline and 161,935 gal. of butane-propane being produced. The price of natural gasoline is now $0.05 per gallon whereas for 9 months of last year it was $0.0125 per gal.

Normally the carbon black plants consume more gas than any other outlet. There are 29 channel process plants and one electric-screen plant operating on residue gas from the gasoline plants. Production of carbon black runs about 1.413 lb. per 1,000 cu. ft. and the monthly throughput generally runs about 800,000,000 cu. ft.

Probably this year will see a greater demand for sweet gas than ever before. Several of the lines shipping gas from the area have been enlarged and the increased industrial activity in the larger centers of population will be felt. There has been no recent increase in price from its normal range of $0.025 to $0.045 per 1,000 cu. ft.

Watching WASHINGTON

By HENRY D. RALPH

Industry Being Geared for Wartime Requirements

WASHINGTON, D. C., Dec. 15.—Major steps were taken in Washington this week to gear the American petroleum industry into its all-important place in World War II.

Formal approval was given to the Petroleum Industry Council for National Defense, and this body of 66 leading oil executives prepared to set up a permanent office staff here to keep in constant touch with all industry problems related to the war. (See p. 17.)

The Government took complete control of the aviation-gasoline industry through a formal "recommendation" from Petroleum Coordinator Harold L. Ickes which is tantamount to a mandatory order and was so described in the official release of the Office of Petroleum Coordinator. (See p. 22.)

A formal plan, also having mandatory status under executive war powers, controlling conservation and production of crude petroleum in California was approved by the Department of Justice and signed by Coordinator Ickes for promulgation this week. (See p. 21.)

In addition to these major developments, activity intensified in all government agencies dealing with war problems of the oil industry and in industry committees and subcommittees.

The first sign of a crack in the frozen oil price situation came when the Office of Price Administration granted a partial increase in the North Texas crude differential, but in spite of increasing pressure from oil-state members of Congress there was no indication that OPA will soon sanction a general upping of oil prices. (See p. 82.)

At least five new formal recommendations to the industry are in various stages of preparation in OPC, illustrating the pressure under which that agency is working. Over the week end OPC issued recommendations Nos. 16 and 24 and the California production plan is No. 19, but the subjects of the missing numbers have not been disclosed.

A recommendation on conservation of containers was issued last week and the industry's container subcommittee is meeting here again this week.

The Maritime Commission invoked war-time secrecy on movements of tankers, but definite indication that military requirements may cause disruption of normal tanker service was given by Coordinator Ickes when he announced that industry committees have been ordered to survey supply and distribution conditions on the Pacific Coast and Alaska.

Federal control of production in Illinois was put off, perhaps only temporarily, when Coordinator Ickes telegraphed the governor of Illinois asking that the called special session of the Illinois Legislature enact conservation legislation. (See p. 18.) In view of the fact that the OPC has been preparing its own conservation plan for Illinois, this telegram was interpreted as giving the state one last chance to avoid federal control by enacting its own law. The OPC Illinois plan is still under active consideration by the Department of Justice, but its promulgation may be held up for some time.

Petroleum Industry Council for National Defense at its first meeting in Washington. Sixty-six members of the industry comprise an oil council of war, and will meet monthly to formulate policies

The imminent shortage of tetraethyl lead is receiving continuing study, and while officially this is a matter under the jurisdiction of the lead allocation section of the OPM, the OPC is assisting the industry in an unofficial way. A special committee has been created headed by Wright Gary, OPC director of refining, and including Dr. Graham Edgar, chief technologist of the Ethyl Gasoline Corp., and the five regional refinery committee chairmen. Among other things, this committee is attempting to gain permission for the Ethyl corporation to purchase lead from marginal mines, now closed, at above the prevailing price ceiling and, meanwhile, to permit the Ethyl corporation to increase its percentage allotments of ethyl fluid to its customers during the first quarter of 1942.

High Octane Deprecated

Meanwhile, the Consumer Division of OPA issued a release deprecating the value of high-octane automotive gasoline, a move which was interpreted as indicating impending action to force a reduction in the quality of motor fuel available to the public.

Organization of the Petroleum Industry Council (PIC) was approved by a formal recommendation from the coordinator outlining its powers and duties. Following the election of an executive committee of 25, the council appointed a subcommittee on prevention of waste, and authorized its chairman, William R. Boyd, Jr., to locate office space and establish headquarters in Washington. The council will be financed by voluntary contributions or assessments, rather than by the Government. It will not interfere with the regional industry committees, all of which are represented on the council, but will concern itself with national and general industry problems connected with the war.

It will be the duty of the subcommittee to determine what contribution users of gasoline and oil in the United States can make to the war effort by following a policy of rational conservation. Members of the subcommittee are: W.

Alton Jones, chairman, president of Cities Service Co., New York; W. S. S. Rodgers, president of the Texas Co., New York; Col. J. Frank Drake, president of Gulf Oil Corp., Pittsburgh; Wm. F. Humphrey, president of Tide Water Associated Oil Co., San Francisco, Calif., and Col. T. H. Barton, president of Lion Oil & Refining Co., El Dorado, Ark.

The subcommittee, Mr. Boyd said, is to determine the character and nature of preventable waste of petroleum and is to report to the executive committee appropriate measures "to publicize the necessity of a policy of rational conservation of petroleum and its products" so that the cooperation of the public may be secured.

•

Coordinator Outlines Pattern Of Operation for War Time

WASHINGTON, D. C., Dec. 15.—A definite pattern of operation was outlined for the Petroleum Industry Council for National Defense in the formally approved recommendation issued last Saturday by the Office of Petroleum Coordinator. The recommendation was issued with the approval of the Department of Justice.

"The purpose of the council," Coordinator Ickes' formal statement reads, "is to mobilize most effectively the resources and abilities of the petroleum industry to deal with the emergency conditions under which the industry must operate and to provide a competent, responsible and representative body equipped and authorized both to advise the Petroleum Coordinator for National Defense with respect to the petroleum industry and carry into effect immediately measures affecting that industry recommended by the Petroleum Coordinator for National Defense as essential to the national defense."

Excerpts from the recommendation which follow give the program of operation.

Duties and Functions

The Petroleum Industry Council shall: (*a*) advise or inform the Petroleum Coordinator for National Defense with respect to any matter relating to the petroleum industry submitted to it by the Petroleum Coordinator for advice or information; (*b*) raise and consider on its own motion and, if deemed necessary or desirable, propose to the Petroleum Coordinator for National Defense any action relating to the proper coordination of the petroleum industry for national defense, as indicated by the president of the United States in his letter of May 28, 1941, establishing the Office of Petroleum Coordinator for National Defense; (*c*) take any action or perform any duty or function specified in any formal recommendation of the Petroleum Coordinator for National Defense which has been duly submitted to the attorney general and entered in the Federal Register, or in any approved plan effective under any such recommendation.

Surveys and Investigations

In accomplishing the purposes and objectives of the Petroleum Industry Council for National Defense, defined in "duties and functions," the Petroleum Industry Council shall obtain, compile and analyze all pertinent and available facts, figures, and other data with respect to any matter which may properly be before it. In this connection the council is authorized: (*a*) To direct such inquiries and questionnaires to such companies, organizations, or persons as may be necessary or appropriate. (*b*) To ask and receive expert assistance from any company, organization, or person. (*c*) To afford any interested or affected persons an opportunity to present their views. (*d*) To consult with any of the committees or temporary or permanent subcommittees established by or under the authority of the Petroleum Coordinator for National Defense, and with any appropriate representative of the Office of Petroleum Coordinator for National Defense.

Preparation of Plans

The Petroleum Industry Council for National Defense, after compiling and analyzing all available and pertinent data with respect to any matter which may be before it, shall, if the council deems it necessary or desirable, formulate and reduce to writing such specific plan or proposal as shall seem necessary or appropriate and submit it, with a statement of facts and reasons, to the Petroleum Coordinator for National Defense, Washington, D. C..

Organization of Council

The Petroleum Industry Council for National Defense shall select an executive committee which shall have all the duties, functions and authorities of the council whenever the council is not in session.

The Petroleum Industry Council for National Defense may maintain such staff and employ such persons as it finds necessary for carrying out its duties, responsibilities and functions under this recommendation, and may appoint such committees as it deems necessary for investigation and report on specific problems.

Minutes shall be kept of all meetings of the council and of the executive committee and two copies thereof shall be filed in the office of the Petroleum Coordinator for National Defense.

Expenses and Contributions

Operating expenses heretofore or hereafter incurred or paid for the Petroleum Industry Council for National Defense shall be met from a fund to which contributions may be made by companies or individuals engaged in the petroleum industry upon solicitation by the council.

Next Week's Issue Is The ANNUAL INTERNATIONAL NUMBER

Featuring—

- **Seven colored maps, with explanatory notes, dividing the land mass of the world outside the United States into three classifications—producing and most likely to produce oil, less favorable and least favorable.**
- **Bilingual section, in Spanish and English, describing the most modern technique in oil operations — drilling, production, exploration, pipe-line transportation and refining.**
- **Maps and discussions showing effect of the World War on the petroleum industry in both hemispheres.**
- **Reports on oil developments in all countries—and The Oil and Gas Journal's estimate of 1941 world production.**
- **Engineering articles describing modern operating practices outside the United States.**
- **World surveys of fields and refineries.**

El Numero de la Proxima Semana es EL NUMERO INTERNACIONAL ANUAL

Este número contendrá:

- **Siete mapas a colores, con notas explicativas, en los cuales la tierra, afuera de los Estados Unidos de América, se presenta en tres clasificaciones: la productora o más posible de producir petróleo, la menos favorable y la más desfavorable.**
- **Sección bilingue, en español e inglés, en la cual se describen los procedimientos y técnica más moderna en lo tocante a perforación, producción, exploración, transporte y refinería de petróleo.**
- **Mapas y discusiones relativas al efecto de la Guerra Mundial sobre la industria del petróleo en ambos hemisferios.**
- **Informes sobre los desarrolos petroleros en todos los países, y cálculo de la 1941 producción mundial preparado por el Oil and Gas Journal.**
- **Artículos técnicos descriptivos de las modernas prácticas de explotación afuera de los Estados Unidos de América.**
- **Estudio mundial de los yacimientos y refinerías.**

STATE CAPITALS...

ILLINOIS

LEGISLATION TO PLACE the Illinois oil industry under strict control and measures to prevent sabotage in the fields are being considered by Gov. Dwight H. Green and other state officials in a call for an emergency session of the general assembly to convene in Springfield December 18.

Robert M. Medill, director of the state Department of Mines and Minerals, and G. C. (Clem) Curtis, superintendent of the newly organized Division of Oil and Gas Conservation, have suggested to the governor and legislators extensive amendments to the present state law to prevent full federal control of the industry during the wartime emergency.

The special session call, which was filed December 13, asked for "an adequate survey of oil, mineral and natural resources of this state . . . and to enact laws and to amend or repeal any existing laws". . . . to provide for the same.

State legislators interpreted the call as a request by the governor for drafting and passage of a new oil conservation act.

Petroleum Coordinator Ickes sent the following telegram to Governor Green shortly before the subject was included in the emergency session call:

"I strongly recommend that it (the special session) be asked to enact a conservation law with respect to petroleum. There is no item in our whole national economy of more importance in defense than oil, and the wasteful production of it is something that all good citizens should combine to prevent."

Sen. Scott W. Lucas (Dem.) senior senator, in a statement made after Mr. Ickes dispatched his appeal to the governor, said, "From the standpoint of conservation in Illinois, the legislature should hesitate no longer to pass a real oil conservation measure in line with what nearly every other oil producing state in this nation has done."

He declared he did not intend to dictate the course of action to be followed by the legislators, but he was emphatic in his belief that oil wastage in the state is serious enough to warrant immediate remedial action.

LOUISIANA

DEVELOPMENT in the area of Central Louisiana's most recent Wilcox sand discovery well in Catahoula Parish may be slowed down a little by the recent court ruling concerning state-land leases. District Judge J. D. Womack last week in Baton Rouge issued a temporary restraining order asked by Grover C. Womack et al of Catahoula Parish against issuing a mineral lease on a tract of state-owned land in Catahoula and Concordia parishes.

George M. Wallace and Wade O. Martin, Jr., represented the plaintiffs who claimed the state Mineral Board described the land "insufficiently to form the basis for a valid lease."

The suit said the board had received a bid from the Phillips Petroleum Co. offering $25,000 bonus and asked that the board, the company, the registrar of the state Land Office and Gov. Sam Jones be restrained from accepting the bid or taking any further action regarding the leasing of the tract. A hearing was fixed for December 19 by Judge Womack.

The discovery well in the area was Roy Fisher 1 Womack and Cotton, located in the extreme eastern part of Catahoula Parish.

KANSAS

MARKET-DEMAND hearing to determine allowable oil production for January will be held by the Corporation Commission at Wichita, Kans., December 23. December allowable is 264,000 bbl. daily.

Hearing on the market demand for natural gas from the Cunningham field of Pratt and Kingman counties will follow the oil session.

TEXAS

NO ALLOWABLE for January was set by the Railroad Commission after its monthly market demand hearing in Austin this week. Instead, the commission recessed until later at the request of Robert E. Allen, director of production for the Office of Petroleum Coordinator. Mr. Allen informed the commission by telegram that the situation arising from the war prevented furnishing "certain essential information" for the hearing.

Immediately those present discussed the possibility that a far-reaching federal plan to increase the output of aviation gasoline might be announced. Olin Culbertson, member of the commission, said he believed such a plan was being formulated and Chairman Ernest O. Thompson asserted the federal plan would be given full publicity when received. He said the hearing would be reopened as soon as feasible. It was also pointed out that Commissioner Jerry Saddler was in Washington discussing the oil situation.

Nominations by purchasing companies were presented at the hearing in spite of the recess. They averaged 1,962,154 bbl. a day, an increase of 14,751 over the nominations for December.

ILLINOIS OIL CONSERVATION DIVISION STAFF GIVEN INSTRUCTION ON DUTIES . . .

Here is the staff of the Illinois conservation division taken at its first organization meeting. The division is chiefly concerned with well spacing and administration of completion regulations. Front row: John W. Spence, chief inspector; Edward Alexander, personnel director; G. C. Curtis, superintendent; Robert M. Medill, director of the state Department of Mines and Minerals; Robert Jean, assistant superintendent; and Samuel F. Peterson, petroleum engineer. Second row: Sherman Heape, investigator; Sherman Landis, inspector; Joseph Long, inspector; H. Bruce Thompson, inspector; George W. Williams, inspector; E. D. Fox, inspector; Wayne Fitzgerald, investigator; Robert R. Randolph, deputy inspector; John Mulligan, investigator; William Atkins, petroleum statistician. Back row: Joseph M. McMullen, investigator; John Rushing, superintendent of safety division; J. V. Oldani, deputy inspector; John McMillan, inspector; Cloyd Bradham, investigator; W. J. Tannehill, investigator; Elmer Gibbons, investigator; Clint Lindsay, investigator; and A. V. Stoltz, deputy inspector

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

War

A study of comparative strength leads inescapably to the conclusion that the most important single asset of the Allies lies in their outstanding dominance in petroleum. The United States, Soviet Union, Great Britain and Netherlands, now allied in the most widespread war of all time, for years have been the major oil powers and their combined operations were never more complete than they are now.

Led by this country, which starts this war with 65 per cent of the world's petroleum, the oil activities of the four nations extend to every part of the globe with production, refining, transportation and marketing. Nationals of this country, Great Britain and Netherlands have carried on operations in other areas and their output is now part of the oil supply available to the Allies. Important in this respect is the production of Venezuela and other nearby nations so that more than three-fourths of all petroleum production and known reserves are within a 2,500-mile radius of New Orleans.

Oil predominance of the Allies does not end here. The tools with which oil is found, produced and manufactured into finished products are essentially an American enterprise. Developments in exploration, drilling and processing methods have come largely from the equipment and manufacturing trade whose products and services are found everywhere. These concerns, cooperating with the operating companies, have perfected many arts which have given this country and its friends their controlling position in petroleum.

The plight of the Axis is proof of the statement that oil is where you find it and there is nothing that warmad peoples, whose dictators seek world dominion, can do about it. Millions have been spent in oil search in Germany, Italy and Japan and their crude-oil production at this time is half that of the State of Arkansas. Domestic purchasers in this country consume a year's crude production of the Axis in less than 4 days.

This situation has forced the Axis powers into the field of synthetic production, so costly and unsatisfactory that a prominent Nazi warned in prewar days it could never be a competitive substitute for petroleum in the development of a sound national economy and the maintenance of an all-powerful military organization.

Conceded that the Allies have the oil, the question arises as to what they are going to do about it in this greatest crisis in world affairs of modern times. The first duty obviously is that of protection. The mistake of the Balkan invasion in which Rumanian oil was permitted to pass to the Axis practically intact must not be repeated. This oil, which amounts to nearly half of the Axis' present supply, made possible the Russian invasion, and similar acquisitions will assure more offensives for the greatest military machine that has ever been developed but which will become impotent without oil.

All of the large petroleum production and refining facilities of the Eastern Hemisphere are within striking distance of the enemy. It would seem that the protection of these primary resources of war and peace should come first in Allied military plans, with measures taken for their complete destruction should the might of the enemy prevail for a time in certain areas.

Provision for the maintenance of this superiority in oil is equally important. The Allies' ability to produce and control all but a small percentage of the world's oil is the result of the labors of tens of thousands of men of many nations, supplied with hundreds of special materials and tools, who are doing what it would have been impossible to do a few years ago. Any cessation in that activity will cripple the Allied strength at its source and give encouragement to the enemy.

PRIORITIES.

Answers to a few of the most pertinent questions asked about procurement of petroleum equipment

This is another of the special-service series of questions and answers on priorities for the petroleum industry which has been appearing most weeks since the September 11 issue.

The Oil and Gas Journal has made arrangements to secure authoritative answers to questions arising among operators in all branches of the petroleum and natural-gas industries and manufacturers and suppliers of materials and equipment on preference ratings. Questions are invited and should be addressed to The Oil and Gas Journal, Priorities Question Department, P.O. Box 1260, Tulsa.

QUESTION: Recently, we have heard that the OPM is creating a division for the purpose of requisitioning essential materials needed for national defense. Can you elaborate on this point and tell us in a general way what inventories may be considered subject to this program?

ANSWER: The OPM has announced that it will organize a war materials requisitioning section under the direction of E. A. Tupper to provide for prompt acquisition of essential materials needed for national defense. No materials needed for national defense and already allotted to defense industries will be seized by the Government. Neither will materials already allocated for essential civilian industries be disturbed.

QUESTION: How are operators proceeding with purchase of scarce materials pending issuance of an industry priority order that will permit producers, refiners and pipe-line companies to buy from suppliers now using P-83?

ANSWER: Operating divisions of the industry are still using Preference Rating Order P-22 for maintenance and repair materials and PD-1 for emergency requirements pending issuance of the blanket A-8 rating order which may be out this week.

QUESTION: Is there any indication of how long supply companies will require to answer the Form PD-82-A and start receiving materials under the provisions of Preference Rating Order P-83?

ANSWER: Several supply companies have indicated that they will require at least 30 days in which to give the breakdown on sales, inventories and estimated requirements as called for in PD-82-A and only then by employing extra help and working longer hours.

QUESTION: In connection with Preference Rating Order P-83, please advise how and where serial number, which is to be filled in the heading of the preference rating order, may be obtained?

ANSWER: The serial number which will eventually become a part of the OPM's record for each application for use of the P-83 accepted and approved will be supplied from Washington, D. C. The supply company wishing to qualify under terms of P-83 must obtain Form PD-82-A which calls for a mass of information on the supplier's requirements and inventories. Data supplied in completing Form PD-82-A becomes the basis for acceptance or rejection of the supplier's application for assistance in acquiring materials under provisions of Preference Rating Order P-83. The first step to be taken, after deciding to make application under provisions of P-83 is to file intent with the Office of Petroleum Coordinator and obtain Form PD-82-A, supply the requested information on that form and file it according to instructions.

QUESTION: What is the style and nature of Form PD-82-A which we understand is required in connection with applying for permission to use a preference rating of A-8 under terms of Order P-83?

ANSWER: There are four major divisions of PD-82-A. Section A of the form calls for a report on total sales for 1939, 1940 and the first 6 months of 1941, estimated or actual sales to the petroleum industry only and by classes of products available from book records. Section B calls for total inventory on December 31, 1939 and 1940 and June 30, 1941, also for a breakdown by classes of products available from book records. Section C calls for a detailed breakdown of inventory on June 30, 1941, receipts during the quarter ended September 30, 1941; quantities used or sold during the quarter; inventory as of September 30, 1941, and the total anticipated materials required during the first quarter of 1941 along with an estimate of the value. Section C covers four general classes of products, including cast and malleable iron, steel, alloy steel and copper and alloys. There are several subdivisions of products. Section D of the form is a breakdown of information on the same dates as specified in Section C but classified into 34 specific groups of equipment used in the oil industry.

QUESTION: Should the declarations of acceptance of P-83 be sent to the Office of Production Management or to the Office of Petroleum Coordinator?

ANSWER: The applications should go to the Office of Petroleum Coordinator, Washington, D. C.

QUESTION: Are Preference Rating Order P-83 and PD-83-A connected in any way?

ANSWER: No. P-83 is a specific order dealing with assignment of preference rating of A-8 to manufacturers, supply houses and subsuppliers of petroleum producing, refining and transportation equipment. PD-83-A is a form linked with Preference Rating Order M-21-B which deals with steel. All numbers prefixed with PD concern forms having some significance to a Preference Rating Order which are all prefixed with a single letter.

QUESTION: Does Preference Rating Order P-83 and PD-82-A replace Form PD-25-A which is linked with the steel order?

ANSWER: There is indication on the face of the orders that certain oil-field equipment concerns, particularly those who manufacture a part or all of their supplies, may find it preferable to continue operation under the PD-25-A form. Provisions of both possible means of operating should be investigated before deciding which course to follow.

Tankers Will Be Sent West To Meet Pacific War Needs

WASHINGTON, D. C., Dec. 15.—Another reshuffling of oil tankers, made necessary by increased needs in the Pacific, was forecast by Petroleum Coordinator Harold L. Ickes last week at a meeting with members of the newly organized Petroleum Industry Council for National Defense.

This development followed closely the announcement, also made by Mr. Ickes, that 17 additional tankers had been returned to their owners during November from the British shuttle service, bringing the total number of tankers returned by the British since October 23, last, to 38. It was also announced that three more shuttle-service tankers would be turned over to the owners within the week.

"Release of the tankers was made possible," Mr. Ickes said, "by improvement in the British petroleum situation, brought about by measures undertaken by the American Government. The release of the ships enabled the removal of East Coast restrictions on consumption of gasoline."

War conditions on the Pacific Coast were expected to make necessary the immediate transfer of at least 20 tankers to service in that area in order to mobilize the whole California oil industry. It was noted that few of the tankers withdrawn from the Pacific for the British had been returned, and war activities will undoubtedly create a demand for even more vessels than were in service before the British transfer.

One phase of the industry's war job, it was pointed out, will be to supply the naval base at Honolulu and the American fleet in Pacific waters with all the petroleum products they will need, including especially 100-octane aviation gasoline for the air arm and fuel oil for naval units.

No official information on the number of tankers that may be shifted from Atlantic and Gulf Coast service is expected to be released, but some quarters predicted it would be sufficient to bring about another shortage of tankers in those areas.

OPC Approves California Conservation Program

By L. P. STOCKMAN

LOS ANGELES, Calif., Dec. 16.—The California conservation plan, which was prepared at the request of Petroleum Coordinator Ickes and which has been revised several times to meet suggestions and recommendations of the OPC, was finally approved December 11 and will be put into operation at the earliest moment and undoubtedly become effective January 1. The Conservation Committee of California Oil Producers has been officially appointed the administrative body to carry out provisions of the new measure. This committee, headed by A. H. Bell, of Continental Oil Co., as chairman and L. P. St. Clair as administrator, has been the official curtailment committee for several years and has been appointed as a body which includes regular committee men and alternates.

This new plan will supplant the existing uniform method of allotment which has been in effect since May of last year. The production committee for District 5, of which E. E. Pyles is chairman, has called a general meeting of all producers, landowners, royalty owners and all others interested in California oil production for December 17 to be held in the Biltmore Hotel in Los Angeles. At this meeting Mr. Pyles will present the new production plan and A. L. Weil, chairman of the general committee for District 5, W. L. Stewart, Jr., chairman of the refining committee, Charles S. Jones, chairman of the transportation committee, and Clarence S. Beesemyer, chairman of the marketing committee, will outline the problems and requirements of the other branches of the industry, indicating their effect on the producer and on each other.

No Objection Anticipated

It is not expected that there will be any serious objection to the new production plan because it is here to stay. It remains for the newly appointed committee to determine how its provisions are to be carried out to accomplish the desired results. The federal Government, through one of its branches or through the coordinator's office, will establish the allowable production to which the administrative committee of the plan will allocate current production monthly. California's new conservation plan will be administered as fairly as possible, but it must be remembered that the United States is at war and the first duty of the committee will be to gear production to demand. The committee may also find it necessary to distinguish between fields and allocate production on the basis of requirements. This means that if some fields produce a high-octane gasoline and others produce an inferior grade of gasoline and the demand at the moment is for high-octane gasoline, then the first-named group would get a higher allowable and the latter group would be subordinated.

Likewise, and this may be an important factor in future allocation of production if there is a high demand for fuel oil, then fields producing a heavy type of crude oil will be given priority to production. In the projected demand for certain types of crude oil to meet requirements of refiners meeting certain specifications on refined products it is possible there may be discriminations among fields. There are so many complex angles to the problem involved that it is difficult to appreciate the possible effect of the war and its effects on the individual producer.

At this present moment there is no assurance that rationing of gasoline will not be invoked in Washington and Oregon. In fact, every indication points to that eventuality. Necessary agencies in those areas will of course be provided with fuel requirements whether it be fuel oil, diesel, lubricating-oil or gasoline, particularly those agencies engaged in defense work. Ample fuel will be provided for doctors, police and firemen, but it looks at this present moment as if residents of Washington and Oregon can put their cars in the garage until a definite plan has been worked out.

Primarily, the first objective of the Navy is to fight and after that it may engage in convoy work, but convoy work is definitely of secondary importance and if no convoys are being undertaken then the residents of Washington and Oregon will find it impossible to secure supplies of gasoline and must consequently restrict the use of automobiles.

E. E. Pyles, chairman of production division for District 5, who called a general meeting of all producers, landowners, royalty owners and all others interested in California oil production, for December 17. At this meeting Mr. Pyles presented the new production plan

This brings up an important matter which will receive serious consideration by the administrative committee of the new plan within the next several days. No one at present can foresee what developments will take place in the transportation of crude and refined oil, especially water transportation. This is of importance because if water transportation is restricted it will exert a very pronounced influence on production activities in the Elwood and Capitan fields of Santa Barbara County, which depend entirely upon water transportation.

Likewise, restriction in the use of tankers will force marketers to discontinue the transportation of crude oil from San Joaquin Valley points to San Francisco and Los Angeles by water. Affected by such a restriction would be movements from Port San Luis, Estero Bay and Monterey, and as has been mentioned, Elwood and Capitan. Ventura would be affected to a lesser degree and in this case it would be possible to step up the capacity of Shell's crude-oil pipe line extending from Ventura to Los Angeles by installing additional pump stations which for the present could be of temporary construction. This would enable Shell to move Tide Water Associated Ventura production to Los Angeles and might alleviate conditions by offering a little relief to Elwood and Capitan operators who could haul limited amounts of crude oil eastward to Ventura.

Kettleman North Dome appears to be in a rather vulnerable spot inasmuch as it yields a gasoline with a low octane rating and a reduction in production of this field would not be at all surprising. The new plan which, among other things, prohibits the transfer of allotments from one field to another without specific permission will enable the administration committee to nail down production to the prescribed allowable in contrast with the existing plan which does not have any legal authority to force compliance.

There will be plenty of authority under the new plan, although it may not say so in so many words. The existence of pipe-line facilities will undoubtedly be a dominating influence in future production as this may determine the ability of an operator to produce and move production to refining centers.

The Department of Justice gave only conditional approval of the plan, Thurman Arnold writing Mr. Ickes that in view of its sweeping nature and the amount of power delegated to the committee the plan does not come within the clearance procedure previously established between the OPC and the Justice Department. However, because of grave emergency in California and vital interest of War Department, Mr. Arnold said the Justice Department would not bring criminal or civil actions against participants but reserved the right to investigate actions taken under the plan at any time and complete freedom to bring civil action to enjoin any restraint of trade in violation of antitrust laws continued after notice to desist.

It is understood that this arrangement is satisfactory to the production committee. Similar Justice Department doubts are believed to be holding up approval of the pending Illinois plan.

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Revenue Bureau Grants Relief in Oil-Tax Ruling

Relief from a ruling which would have reduced the amount of depletion allowance to oil and gas companies for tax purposes has been granted recently, following protests from the industry and oil associations.

In a reinterpretation of the depletion section of the Revenue Act, the Revenue Bureau, a few days ago, issued its new G.C.M. 22956, superseding No. 22689, and restoring, for practical purposes, the method of computation heretofore in use.

This new memorandum provides that "the net income . . . from the property for purposes of determining the net income limitation on the percentage depletion allowance must be separately computed for each depletable economic interest or property by the taxpayer. Deductible items directly attributable to a specific interest or property are deductions only in computing the net income from that property. Overhead or general items of deduction must be fairly allocated between depletable properties and the activities relating thereto and all other types of properties and activities. The part thereof allocable to depletable properties must then be fairly apportioned to the several specific properties."

Pooling of Aviation-Fuel Facilities Is Authorized

FEDERAL direction of the aviation-gasoline industry, instituted this week by the Office of Petroleum Coordinator, is probably the most significant order issued by the oil agency. This industry appraisal of Recommendation Number 16 takes into consideration the cooperative action authorized in the document itself which already has received Department of Justice approval.

Promulgation of the aviation-gasoline recommendation, which has the full force of an order, came after chairmen of the district refining functional committees and representatives of refiners spent several days in Washington, D. C., discussing the most feasible methods of accomplishing the objective of greater production.

SPAB Tuesday gave formal approval to the OPC aviation-gasoline program which means steel allocations and high priorities for refinery construction to triple production capacity. Most of the program was outlined by OPC before secrecy was invoked, and it is understood there have been no important changes.

The Defense Supplies Corp. has agreed to contract with aviation-gasoline producers to purchase the entire output for 3 years to insure capacity production. Stocks will be stored and turned over to the Army and Navy as needed.

Oil companies, pursuant to the direction of the petroleum coordinator, are authorized to engage in pooling operations in order to expedite the program for increasing production. Chief objectives of the plan are to secure maximum production with present facilities.

Application of Provisions

The provisions apply not only to the finished product, itself, but also to the high-octane gasoline base stocks and the blending agents used in its manufacture. In addition to this strict control over future disposal of aviation-gasoline, the order calls for reports from all refiners, as to their existing contracts.

Specifically, the order reads, in part:

"Within 30 days from the date hereof, there shall be filed in the Office of Petroleum Coordinator for National Defense a full statement of the terms of existing contracts and agreements for the production, storage, use, sale or other disposition of all grades of aviation-gasoline and all grades of aviation-gasoline base stocks and blending agents."

The order further provides that, except in accordance with plans approved under the expansion program:

"No action shall be taken by any producer or refiner of any grade of aviation-gasoline, aviation-gasoline base stocks or aviation-gasoline blending agents with respect to the production, storage, use, sale or other disposition thereof without giving antecedent advice thereof to the Petroleum Coordinator for National Defense in order that he may have an opportunity to make specific recommendations with respect thereto."

The authorization for pooling operations permits companies to combine their production, transportation and refining facilities and to sell, lend or exchange among one another their stocks of crude oil, gasoline and blending agents and their patents and processes "whenever and to whatever extent may be necessary to facilitate the maximum production of all grades of aviation-gasoline or to reduce the time required to produce such gasoline."

The consideration of costs is relegated to secondary importance by a pledge from the coordinator that his assistance will be available in obtaining price adjustments whenever costs of the expansion program shall so warrant and through provisions of the order itself. Committees or subcommittees are authorized to analyze all pertinent data on costs and they may negotiate directly or through the OPC with the Office of Price Administration.

Before the new aviation-gasoline order was issued, the current and future requirements for 100-octane fuel were reappraised on the basis of wartime consumption. Producers of 100-octane motor fuel and their technicians met in Washington with representatives of the OPC and other government agencies. Detailed analyses of refining capacity, storage position and expected requirements were presented by Wright W. Gary, director of refining for the OPC and Robert B. Cragin, assistant director. Brig. Gen. Oliver P. Echols, chief of the Materials Division, Office of the Chief of the Air Corps, told the Army's needs and Rear Admiral Towers, chief of the Bureau of Aeronautics, presented the Navy's requirements.

There were no revised reports issued in Washington on the exact producing capacity for 100-octane gasoline and the figures on demand from the Army and Navy were not revealed.

50,000 Bbl. Current Production

The American Petroleum Institute in New York this week reported the current production of 100-octane gasoline is approximately 50,000 bbl. daily and that plants are now under construction, authorized or planned that will increase this figure to 120,000 bbl. daily within 12 to 18 months. Construction already has started or contracts have been awarded, the A.P.I. reported, for 25 new plants and that "dozens of other plants are being planned."

No estimate was reported on how much 100-octane gasoline production may be increased by the pooling and shuffling of components now authorized but even a modest gain of 10 per cent would be substantial at the present rate of output.

The immediate practical effect on the producing branch of the industry may be to increase crude withdrawals from fields yielding base stock particularly adaptable to manufacture of 100-octane gasoline. A hint that this development may follow was given in a request to the Texas Railroad Commission from Robert E. Allen, director of production for the OPC, that its January allowable deliberations be held open for a few days. The commission honored the request and dispatches from Austin, Tex., where the statewide hearing was held Monday, indicated that the regulatory body anticipated a special request for higher allowables for fields producing high-octane bearing crudes.

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Bruce K. Brown Appointed Aviation-Fuel Consultant

Bruce K. Brown, Chicago, a director of the Standard Oil Co. (Indiana) and general manager of the company's research and development activity, has been appointed consultant on aviation-gasoline problems in the Office of Petroleum Coordinator.

Mr. Brown has suspended his company business duties to serve with the OPC for a period of 90 days. He will assist in solving various problems arising from the tremendously increasing demand for 100-octane gasoline.

In the main, it will be his function to expedite the building of new refining units, and to develop measures for the most efficient utilization of existing facilities until new production is brought about.

In recent years, Mr. Brown has specialized in the technical, patent, and commercial development of new refining processes, including some of those used in aviation-gasoline manufacture.

Blank & Stoller

BRUCE K. BROWN

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Freeze Equipment Prices At April 16 Level

WASHINGTON, D. C., Dec. 15. — Suppliers of oil-field machinery and equipment, and all other jobbers, distributors, and dealers in iron and steel products were ordered today to make no further sales at prices in excess of the levels prevailing on April 16, 1941.

Price Administrator Leon Henderson issued a maximum-price schedule placing a ceiling on all prices for iron and steel products including "prime" products, "seconds," "rejects," and "used" products.

"Object of the new schedule is to end the profiteering which has developed in certain quarters of the steel-distribution trade and which is threatening to disrupt the entire steel-price structure," Mr. Henderson declared.

Today's action means that maximum prices now have been established by OPA for iron and steel products at virtually every stage of distribution.

While the maximum resale prices are intended to apply primarily to jobbers, dealers, and distributors of iron and steel products, the schedule forbids a resale by anyone at a price higher than the ceiling.

Strain and speed are hardest to handle *at the turns* in PIPING, too!

THE DANGER LIES AT THE TURNS

On a bobsled run, constant danger lies at the banked turns. Here the utmost skill of the driver and braker are required to avert an accident. (*N.N.S. photo*).

Insure safer, stronger, trouble-free piping systems with TUBE-TURN welding fittings

When the fluids or gases in your piping systems zoom through the lines and swerve into the turns—*added* strain and friction strike the fittings and joints. Trouble usually develops here *first* in any piping system *because the most danger lies at the turns!*

Weld with TUBE-TURN fittings and *your* plant piping systems will last far longer, function more efficiently and safely, save valuable space, and cut upkeep costs.

There is a TUBE-TURN for *every change in flow direction*—elbows, returns, tees, reducers, laterals, nipples and flanges—made with Tube-Turns' exclusive forging process to give unequalled reinforcement at these danger spots.

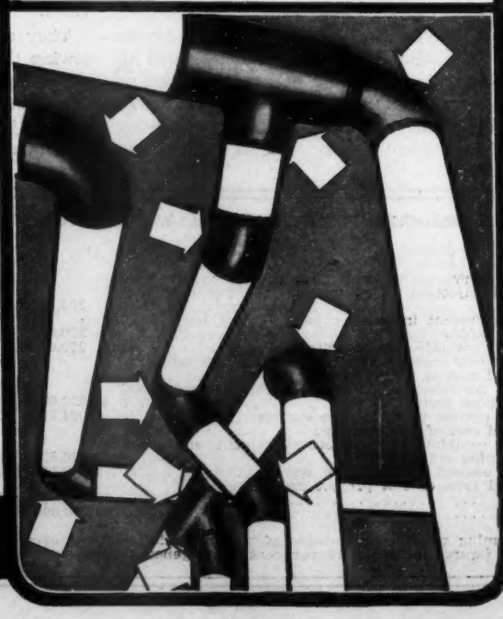
Get complete facts in the helpful Tube-Turn engineering data book and catalog. Write today!

TUBE-TURNS, Inc., Louisville, Ky. *Branch offices:* New York, Philadelphia, Chicago, Pittsburgh, Cleveland, Tulsa, Los Angeles. *Distributors everywhere.*

TUBE-TURN
TRADE MARK
Welding The FIRST WELDING FITTINGS 1ST AND STILL THE BEST *Fittings*

WELDING WITH TUBE-TURNS REMOVES "DANGER AT THE TURNS" IN PIPING

When you think of "turns" in piping systems, remember they occur within tees, reducers, laterals, nipples, heads, etc., as well as within elbows and returns. Wherever there are abrupt *changes in flow direction* you'll find *extra* wear and tear. TUBE-TURN welding fittings provide maximum *extra* strength and safety, and practically eliminate maintenance troubles, at these *danger spots.*



East Texas Water-Disposal Project Is Continued

By D. H. STORMONT

DALLAS, Tex., Dec. 13.—Work on the formation of a cooperative organization to handle the 500,000-bbl. daily salt-water production of the entire East Texas field is continuing, with indications pointing to such a company being formed within the next few weeks. At the meeting of East Texas operators here this week most companies stated they were interested in such a project but the majority wanted more information before definitely committing themselves to joining it. For this reason it was voted that the organizing committee proceed to prepare definite plans for organization, work out detailed cost estimates and submit them in the form of a prospectus to all operators in the field.

The organizing committee report, given by Bryan Payne of Iowa Payne Oil Co., Tyler, Tex., proposed the formation of a $4,000,000 corporation of which half of the stock would be subscribed at the time of organization. Of the $2,000,000 to be subscribed, $330,000 would come from independent operators and $670,000 from major oil companies with the $1,000,000 remaining to be represented by the value of existing injection systems. It was felt that the company should be profit sharing in order to make the stock more attractive.

The plan agreed upon by the committee called for the new company to take over existing facilities in the field, consisting of 47 systems having a potential capacity of 190,000 bbl. daily. Since water production is now in excess of 400,000 bbl. daily and is expected to rise still further, it was believed the company should provide facilities for handling 500,000 bbl. of brine daily. Cost of such facilities are shown in the accompanying table, with provisions for taking over various percentages of existing facilities. (The cost data given in this table are essentially the same as those reflected in the table given on Page 34 of the December 11 issue of The Oil and Gas Journal except that they are based on total of 500,000-bbl. capacity instead of 400,000-bbl.; the first column in the accompanying table is essentially Plan A and the last column of figures, Plan C.)

E. L. De Golyer, director of conservation for the Office of Petroleum Coordinator, Dallas, stated his office would do everything possible to speed securing of materials once the project was under way. He urged that the group start returning water to the Woodbine pay sand as soon as possible as the OPC was very much interested in checking the decline in East Texas reservoir pressures. If the operators did not do it, the Government would, he said, adding that equities would probably be better protected if the project was undertaken by the oil companies.

In so far as details are concerned, it appears that the chief problem to be decided is whether the water is to be returned through wells located inside or on the west side of the field. Some engineers feel that wells drilled west of the field would have almost twice the intake capacity of inside wells due to the greater sand section.

It was generally agreed that for most successful operation of the proposed disposal project, it would be necessary that the Railroad Commission add transfer clauses to its existing order granting bonuses for reinjecting salt water. Such provisions would permit an operator to close in oil wells producing large volumes of salt water and produce the allowable of the shut-in well from another well on the lease; and on leases where all wells are marginal, and therefore unable to produce bonus oil granted for reinjection of brine, the operator would be permitted to transfer the bonus to another of his properties or he could transfer the bonus to the disposal company. Thus it is expected that after the company is formed, the group will petition the commission to add such provisions to the existing order.

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Pictorial Record of A.P.I. Trip Is Published

Photographers made a pictorial record of the trip on The Oil and Gas Journal special trains from Chicago, Ill., and Tulsa to San Francisco for the American Petroleum Institute annual meeting which is published in the current issue of Ethyl News, house organ of the Ethyl Gasoline Corp., New York. The entire issue is devoted to these photographs and to others taken of the Oil Men's Caravan which originated from eastern cities.

They are arranged in geographical order following the trip from New York City across the continent to the Pacific Coast and show many scenes of delegates and their wives in San Francisco enjoying entertainment features offered by the entertaining chapters.

COST ESTIMATES FOR PROPOSED SALT-WATER DISPOSAL PROJECT FOR THE EAST TEXAS FIELD*

Per cent of present injection systems taken over by project	100	75	50	25	0
Number of present systems taken over by project	46	35	23	12	0
Required injection capacity (bbl.), 75 per cent load factor	500,000	500,000	500,000	500,000	500,000
Assumed present injection capacity (bbl.); basis 5,000 bbl./well/day	230,000	175,000	115,000	60,000	0
Required new injection capacity (bbl.)	270,000	325,000	385,000	440,000	500,000
Required new systems at 10,000 bbl./day average	27	33	39	44	50
Estimated cost of present systems:					
1. For combination of asbestos cement and wood tar pipe system	$1,633,000	$1,242,500	$816,500	$426,000	0
2. For cement asbestos pipe system	1,964,200	1,494,500	982,100	512,400	0
Estimated cost of new systems:					
1. For combination of asbestos cement and wood tar pipe system	$1,826,550	$2,232,450	$2,638,350	$2,976,600	$3,382,500
2. For cement asbestos pipe system	2,249,100	2,748,900	3,248,700	3,665,200	4,165,000
Estimated total cost of project using:†					
(1)	$3,459,550	$3,474,950	$3,454,850	$3,402,600	$3,382,500
(2)	4,213,300	4,243,400	4,230,800	4,177,600	4,165,000

*Assuming various percentages of present facilities taken over by the disposal corporation.
†Cost figures include a 10 per cent contingency factor.

DEATHS

JOHN P. WEST, 45, in charge of the land office of American Petroleum Corp., at Midland, Tex., and formerly with Prairie Oil Co. in Tulsa, died in Midland of a heart attack last Friday. His widow and a daughter survive.

DANIEL J. SWEENEY, Pennsylvania oil man and a former director of the Pennsylvania Grade Crude Oil Association, died in Buffalo of a heart attack. He was 65 years old. He was president of the LeSeuer Oil Corp. and the Pure Penn Petroleum Corp., both of which operated in the New York field.

JAMES H. CALDWELL, 64, Titusville, Pa., oil man and one of the original sponsors of the Drake Well Memorial Park, died last week in a Tulsa hospital following a short illness. He had come to Tulsa on business for Warner-Caldwell Oil Co., of which he was one of the owners.

LOU TEATWORTH, 60, oil operator of Eastland, Tex., was killed last week when struck by an automobile. Mr. Teatworth went to Eastland 23 years ago from Oklahoma. His widow and five children survive.

FRED L. SIMCOX, 51, independent oil operator, died December 11 in a Dallas, Tex., hospital, shortly after arriving in that city following a visit with his wife in California. Mr. Simcox had operated for more than 20 years in Oklahoma and Illinois. In addition to his widow, he is survived by a son and two daughters.

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THE MARKETS*

CRUDE OIL: An advance of 3 cents per barrel in North and North Central Texas and a 5-cent upward adjustment in southern Oklahoma posted December 11 and December 5, respectively, amplify the strength of the crude market. Requests for advances elsewhere apparently will be held in abeyance until the U. S. Tariff Commission completes its nation-wide study.

REFINERY PRODUCTS: All markets are firm, excepting for local disturbances. Prices are unchanged because of the restrictions imposed by the Office of Price Administration. Fuel oils are moving in larger volume from practically all centers of supply. Demand for gasoline continues to exceed expectations. Most interest is in the problem of reducing octane rating of civilian gasoline.

TANK WAGON AND POSTED DEALER: Here again, prices are firm and unchanged from the previous week. Even the local fluctuations are practically extinct.

FINANCIAL: Oil securities sold lower, suffering from the general pressure exerted on the exchange with the outbreak of war, although not to the same extent as many other groups of stocks. Average of 30 representative stocks for the week ended December 13: High, 26.82; low, 23.76; close, 25.65. Week ended December 6: High, 27.46; low, 25.94; close, 27.07.

*Detailed information in the Market Section.

A survey of the oil reserves of Pennsylvania conducted by Parke A. Dickey and Lawrence S. Matteson of the Pennsylvania Topographic and Geologic Survey indicates that there remain in that state 357,752,000 bbl. of economically recoverable oil. Production of this oil depends almost entirely on secondary-recovery methods. The authors' report will be found beginning on Page 54 of this issue.

International

Venezuelan Crude-Oil Production At Highest Level in History

THE upward climb of Venezuelan crude-oil production continued in October and the daily average output of 681,052 bbl. that month established another all-time peak. Daily average production in September was 648,726 bbl. and in October 1940 output averaged 443,950 bbl. per day.

Both major producing sections of Venezuela, Lake Maracaibo and eastern fields participated in the higher rate of crude withdrawals during October. The increase of more than 900,000 bbl. for the month in production from the Tia Juana field featured the yield of 13,808,220 bbl. from the region of Lake Maracaibo. The increase for eastern Venezuelan fields was more evenly distributed. However, the rise of 160,000 bbl. in October production from the Jusepin field over the output in September lifts that area to fourth position in the ranking of eastern Venezuelan producing districts. Jusepin production is now more than double the rate of output a year ago.

Exports from Venezuela increased to 581,092 bbl. daily in October compared to 573,604 bbl. daily in the previous month. Featured in the increase of October exports is a rise to 834,025 bbl. in the shipments to Canada.

VENEZUELA CRUDE-OIL PRODUCTION

By Fields

	October 1940	September 1941	October 1941
Cabimas	1,261,745	1,916,185	2,042,630
Lagunillas	3,286,000	6,225,345	6,492,205
Tia Juana	3,065,520	4,334,305	5,236,825
Bachaquero	193,060	14,530	36,560
Total Lake fields	7,806,325	12,490,365	13,808,220
Daily average	251,817	416,345	445,426
La Concepcion	61,125	118,455	134,185
La Paz	41,660	32,830	33,255
Mene Grande	930,275	1,116,210	1,127,740
El Cubo	455,610	551,730	571,190
Cumarebo	73,635	157,755	171,370
Las Palmas	2,145	2,505	1,615
El Mene de Mauroa	21,385	17,680	17,490
Hombre Pintado	51,245	44,810	43,905
Mara district	.....	3,720	970
Quiriquire	1,723,615	1,719,780	1,682,565
Pedernales	144,940	126,155	129,275
Temblador	340,860	188,185	265,615
Oficina	1,562,390	1,937,495	1,954,695
Jusepin	331,870	547,180	707,245
Santa Ana	6,120	18,070	17,925
San Joaquin	122,740	216,355	267,485
El Roble	77,985	132,345	140,275
Leona	3,625	9,265	12,100
Guario	4,410	8,005	8,190
Socororo	440	.....	.....
Santa Rosa	.....	12,635	13,050
Rincon Largo	.....	4,560	1,890
Santa Barbara	.....	4,510	2,385
Tabasco	.....	1,185	.....
Total other fields	5,956,075	6,971,420	7,304,415
Daily average	192,131	232,331	235,626
Grand total	13,762,400	19,461,875	21,112,635
Daily average	443,950	648,726	681,052

By Companies

Caribbean Pet. Co.	930,275	1,116,210	1,127,740
Venezuela Oil Concessions, Ltd.	3,690,450	4,551,720	4,969,940
Colon Dev. Co.	455,610	551,730	571,190
Lago Pet. Corp.	2,463,690	6,527,745	7,481,545
Mene Grande Oil Co.	3,540,710	3,869,965	3,748,510
British Con. Oilfields	21,385	17,680	17,490
Central Area Exploitation Co.	51,245	44,810	43,905
Standard Oil Co. of Venezuela	2,582,945	2,946,965	3,124,155
Compania de Petroleo Lago	21,680	14,165	14,725
Socony-Vacuum Oil Co.	4,410	8,005	8,190
Texas Co. (Venezuela), Ltd.	.....	4,560	1,890
Compania Consolidada	.....	4,510	2,385
Orinoco Oil Co.	.....	3,720	970
Total	13,762,400	19,461,785	21,112,635

VENEZUELAN PETROLEUM EXPORTS

From Maracaibo

Shipper and destination—	September 1941	October 1941
Caribbean Pet. Co., Curacao	137,840	131,705
Venezuelan Oil Concessions, Ltd., Curacao	4,584,115	4,888,540
Colon Development Co., Curacao	555,265	574,990
British Controlled, Curacao	14,940	14,840
Central Area Exploitation, Curacao	27,475	40,485
Lago Pet. Corp., Aruba	5,980,430	6,153,280
Lago Pet. Corp., Las Piedras	807,885	570,465
Mene Grande Oil Co., Las Piedras	1,528,905	1,645,245
Mene Grande Oil Co., Aruba	18,770	.....
Mene Grande Oil Co., La Salina	.....	19,085
Stand. of Venezuela, United States	123,670	80,360
Standard of Venezuela, Canada	57,785	89,275
Total Maracaibo	13,837,080	14,208,625
Daily average	461,236	458,343

From Maturin

Standard of Venezuela, Aruba	352,260	158,720
Standard of Venezuela, Guiria	146,045	306,660
Standard of Venezuela, Canada	472,500	566,830
Standard of Venezuela, Tenerife	39,425	82,700
Stand. of Venezuela, United States	117,610	.....
Standard et al (from Boca de Urocoa), Guiria	170,405	249,775
Total Maturin	1,298,245	1,364,685
Daily average	43,275	44,022

From Barcelona

Standard and Mene Grande, United States	1,223,115	1,100,150
Standard and Mene Grande, Aruba	808,865	806,080
Standard and Mene Grande, Curacao	40,820	356,380
Standard and Mene Grande, Canada	.....	177,920
Total Barcelona	2,072,800	2,440,530
Daily average	66,865	78,727
Grand total Venezuela	17,208,125	18,013,840
Daily average	573,604	581,092

●

Turkey . .

Government Issues Strict Orders Covering Fuel Use

BECAUSE of the shortage of gasoline and petroleum products and the difficulty of obtaining new stocks, the Turkish Government recently enacted restrictive or prohibitive legislation in regard to motor vehicles and boats and the operations of nonessential bus lines.

A limited amount of gasoline per month has been allotted to certain official cars, as well as to taxicabs and such other private vehicles as are allowed to operate.

Great Britain . .

Group Asked to Reexamine Synthetic Fuel Question

LOW temperature carbonization of coal and peat is to be reconsidered by a committee serving under the general direction of the secretary for mines. The general question was investigated last year by a committee headed by Lord Henley and this group has been asked to reassemble in a special request from the secretary of mines.

The committee has been asked to examine the sources of fuel for producer-gas vehicles and to estimate the quantities that could be made available at the present time. The committee is also to report on the measures that would be required to increase the supplies should the necessity arise.

The Secretary of Mines has also asked Lord Henley's committee to inquire whether the development of the country's peat resources would make any useful contribution to the supplies of domestic fuel in the present coal situation.

Colombia . .

Production Rises, Runs To Stills and Exports Fall

PRODUCTION of crude petroleum in Colombia during August 1941 increased to 2,332,777 bbl., from 2,118,981 in the preceding month. The volume of crude petroleum refined declined to 251,969 bbl., from 254,611 in July. Exports of crude petroleum totaled 2,105,444 bbl., compared with July shipments of 2,529,652 bbl.

Production of refined products in July and August was as follows:

(In barrels of 42 U. S. gallons)

Product:	July 1941	August 1941
Gasoline	84,644	88,249
Ethyl gasoline	3,249	2,585
Kerosene	12,279	18,979
Power kerosene	.....	920
Fuel oil	130,988	124,042
Gas oil	12,552	13,489
Residual fuel oil	1,272	1,555
Asphalt	4,969	6,131
Lubricants	4,845	3,829
Naphtha	172	127
Dry-cleaning fluid	531	.....
Topped crude	49,306	50,040

Argentina . .

Demand for Gasoline Will Increase About 8 Per Cent

INDICATIONS are that demand for gasoline in Argentina this year will exceed 9,000,000 bbl., an increase of approximately 8 per cent over 1940 when the requirements totaled 8,531,000 bbl. The higher production is more than supplying the increase in demand, leaving Argentina in a slightly better position from a standpoint of trade balance than in past years. The indicated demand for gasoline for the past 7 years is shown in the following table:

(Thousands of barrels)

Year—	Refinery gasoline	Imports	Exports	Indicated demand
1934	5,152	522	64	5,670
1935	5,976	26	37	6,087
1936	6,185	7	14	7,151
1937	7,004	179	8	7,340
1938	7,560	17	16	7,612
1939	8,610	19	34	8,092
1940	8,074	17	32	8,531

Natural Gas News

Bureau of Mines Reports on Long Study of Gas Hydrates

"Freezing" of natural-gas pipe lines in cold weather by the formation of snowlike compounds called gas hydrates is being investigated by the Bureau of Mines through temperature surveys of certain western pipe lines, according to a report submitted today by Dr. R. R. Sayers, director.

The gas hydrates form in pipe lines at temperatures as high as 60° F., the report revealed, and their elimination constitutes a major engineering problem in the transmission of natural gas through pipe lines. Moisture condenses in the pipes and unites chemically to form the ice-like substance. To predict the formation of gas hydrates and to study possible control methods, according to the report, it is necessary to know the temperatures of buried pipe lines transporting the gas.

Bureau chemists established temperature-reading stations on a 340-mile natural-gas pipe line extending from the Texas Panhandle to Denver, Colo., and control stations where temperatures were recorded at the surface and at various depths to a maximum of 10 ft. below the ground level, the report stated. Measurements at those stations for nearly 4 years showed that the temperature of the gas in the line generally approximated the temperature of the ground at the depth of the center of the pipe.

Fluctuations in the temperature of the gas as it crossed under a river bed were recorded by thermometers installed in the pipe line on either side of the river. Some decrease in temperature of the gas due to cooling of the earth by the river water was noted, but even when the river was full of ice the gas flowing at a temperature of 42° F. was cooled only to 40° F. by the river crossing. Other temperature changes exclusive of seasonal variations were observed because of abrupt changes in depth of the pipe line and the disturbing influences of compressor stations.

The report described the method of obtaining the temperatures and contains continuous temperature records taken at 10-mile intervals along the pipe line. These include atmospheric temperatures, ground-surface temperatures, and underground readings, and cover periods of 3 to 4 years.

A copy of the report may be obtained by writing to the Bureau of Mines, Department of the Interior, Washington, D. C., for Report of Investigations 3590, "Temperatures of Natural Gas Pipe Lines and Seasonal Variations of Underground Temperatures," by W. M. Deaton and E. M. Frost, Jr.

New Line to Make West Virginia Gas Available to Ohio Fuel

A certificate of public convenience and necessity has been issued to Gas Transport, Inc., a wholly owned subsidiary of the Anchor Hocking Glass Corp., for the acquisition and operation of a 14 to 18-in. natural gas line now being constructed by Anchor Hocking and extending 38 miles from near New Era, W. Va., to the vicinity of Gravel Bank, Ohio. The line will be used to transport natural gas to meet requirements in Anchor Hocking's two glassware plants in Lancaster, Ohio, and to transport gas for the Ohio Fuel Gas Co. to be sold by Ohio Fuel for resale in Cincinnati, Columbus, Dayton, Toledo, and other Ohio communities.

Gas to be transported over the new line will be purchased by Anchor Hocking and Ohio Fuel from leased acreage of the Columbia Carbon Co. in Jackson County, West Virginia (designated as the Ravenswood district). Delivery of the gas from the terminus of Gas Transport's line at Gravel Bank to Anchor Hocking's glassware plants at Lancaster will be made by Ohio Fuel Gas Co. Upon commencement of the delivery of natural gas over the new pipe line, the order states, Ohio Fuel will terminate its present contract for the purchase of gas from Hope.

The Federal Power Commission action will enable Ohio Fuel and its associate Northwestern Natural Gas Co. in Columbia Gas & Electric System to effect savings approximating in excess of $400,000 during the next calendar year over their present purchase arrangements with Hope Natural Gas Co. Ohio Fuel serves Cincinnati, Columbus and Dayton, among some 350 communities in Ohio. Northwestern serves principally Toledo and vicinity with natural gas transported to it by Ohio Fuel.

Estimated cost of the new line approximates $781,524.60 exclusive of compression equipment. Annual operating and maintenance charges approximate $126,604.27, exclusive of additional charges to be incurred after the installation of compression equipment.

The order stipulates that the pipe line shall be completed within 30 days from the date of the issuance of the certificate.

Refinery News

Aircraft-Engine Specifications Revised to Tolerate More Lead

Specifications have been revised on Army and Navy Grade 100 aircraft-engine fuel to include the addition of 4 cc. of lead. This amendment forms a part of and should be attached to AN Aeronautical Specification AN-VV-F-781, dated September 26, 1940.

Paragraph E-10*b*: Amended by deletion of the words "and it shall be neutral."

Paragraph E-12: Amended to read: "E-12. Lead Content.—The fuel may contain tetraethyl lead in the form of 1-T mix ethyl aviation fluid in concentration not exceeding 4.0 ml. of tetraethyl lead per U. S. gallon."

Paragraph E-13: Amended to read: "E-13. Inhibitor.—The following active inhibitors may be added separately or in combination to the fuel in total concentration not to exceed 1.0 lb. of inhibitor (not including weight of solvent) per 5,000 gal. of fuel in order to prevent the formation of gum and the precipitation of lead compounds: Monobenzyl-para-aminophenol, isobutyl-para-aminophenol, normal butyl-para-aminophenol, N, N' dibutyl-para-phenylenediamine, ortho, meta and para-cresols, and alpha-naphthol."

Paragraph F-5*e*(4): Amended by deletion of the last sentence.

Paragraph F-5*e*(7): Amended by deletion of the entire paragraph.

Paragraph H-2: Amended by deletion of the entire sentence: "Prior to the submission of bids or award of contract for Navy procurement, the manufacturer is required to forward samples for qualification tests."

Paragraph H-2*a*: Amended to read as follows: "H-2*a*. Qualification tests of the Grade 100 aircraft engine fuel will be conducted by the U. S. Naval Engineering Experiment Station, Annapolis, Md., on samples submitted for qualification as an acceptable product."

Paragraph H-2*c*: The second sentence is amended to read as follows: "Samples shall be forwarded to the Supply Officer, U. S. Naval Academy, Annapolis, Md., marked for the Director, Engineering Experiment Station, Annapolis, Md., plainly identified by securely attached durable tags marked with the following information:"

(Note: Amendment 4 reprinted December 2, 1941, to include material from Amendment 3, which was omitted in original issue of Amendment 4.)

Refinery Is Delayed

CALGARY, Alberta.—Owing to difficulty in securing materials and equipment the $1,000,000 refinery of McColl-Frontenac Oil Co. in East Calgary, announced last July, has been delayed.

Natural Gasoline

Natural-Gasoline Production Rises; Stocks Continue Drop

Production of natural gasoline and recycle condensates in the United States increased to 192,000 bbl. daily in October, a gain of 3,000 bbl. over the rate reported by the Bureau of Mines for September. The chief increases occurred in the Appalachian, Illinois-Kentucky-Michigan, Panhandle and East Texas districts.

Stocks continued to decrease, amounting to 204,540,000 gal. on October 31, compared with 225,666,000 gal. on September 30 and 275,898,000 gal. on hand October 31, 1940.

Shipments to jobbers and retailers and to refinery-owned bulk plants increased in October and were 28,980,000 gal., and 5,292,000 gal., compared with 26,922,000 gal. and 4,326,000 gal., respectively in September. Average vapor pressure increased for all shipments.

Production during October is listed below:

(Thousands of gallons)

	Production			
	Oct. 1941	Sept 1941	Jan.-Oct. 1941	Jan.-Oct. 1940
Appalachian	7,890	6,302	72,708	65,057
Ill., Mich., Ky.	6,924	5,710	53,727	25,760
Oklahoma:	33,870	32,597	315,523	334,803
Oklahoma City	6,320	5,638	58,406	68,856
Osage County	4,974	5,579	47,404	44,200
Seminole	9,865	9,739	92,706	99,714
Rest of state	12,711	11,641	117,007	122,033
Kansas	6,345	5,586	58,734	52,420
Texas:	109,905	105,450	960,023	760,541
Gulf	29,263	27,686	237,515	154,677
East Texas	16,111	15,561	147,673	140,573
Panhandle	26,277	24,763	239,355	212,966
North Texas	2,414	2,299	22,441	37,745
West Central	5,103	4,850	49,392	51,649
Rest of state	30,737	30,291	263,647	162,931
Louisiana	23,040	22,070	133,107	93,149
Arkansas	3,300	2,890	29,159	26,549
Rocky Mountain	8,609	8,549	83,335	77,205
California:	50,101	48,734	483,060	489,502
Huntington Beach	2,764	2,804	26,510	26,507
Kettleman Hills	10,174	9,622	96,096	106,121
Long Beach	7,385	7,229	73,943	74,827
Santa Fe Springs	4,647	4,572	46,569	47,487
Ventura Ave.	5,035	4,643	47,568	53,352
Rest of state	20,096	19,864	192,374	181,208
Total	249,984	237,888	2,189,376	1,924,986
Daily average	8,064	7,930	7,202	6,311
Total (thousands of barrels)	5,952	5,664	52,128	45,833
Daily average	192	189	171	150

ALWAYS SMOOTH SLEDDING WITH

AMERICAN *Heavy-Duty*
ROLLER BEARINGS

PROGRAMS AND MEETINGS

Michigan Oil and Gas Association Elects Officers at Annual Meeting

Directors of the Oil and Gas Association of Michigan elected officers at their annual organization meeting at Mount Pleasant, Mich., last week, choosing Kurt de Cousser, Socony-Vacuum Oil Co., Lansing, as president for 1942. He succeeds George W. Myers, Sun Oil Co., Grand Rapids. Other officers named were: James C. Graves, Saginaw, vice president; George Talbot and W. P. Clarke, co-treasurers, and W. P. Pardoe, Grand Rapids, secretary.

Burdette Blue President of Mid-Continent K-O Group

Burdette Blue, Tulsa, president of the Indian Territory Illuminating Oil Co. before its merger this year with the Cities Service Oil Co., was elected president of the Kansas-Oklahoma division of the Mid-Continent Oil and Gas Association at its twenty-third annual meeting in Tulsa this week. Mr. Blue succeeds Robert S. Kerr, Oklahoma City, Okla., whose term expired.

E. B. Shawver, Wichita, Kans., was elected vice president representing western Kansas to fill the vacancy left by the death September 12, last, of Tom C. Johnson, Wichita.

All other officers of the Kansas-Oklahoma division were reelected. They were: L. G. Owen, Carter Oil Co., Tulsa, first vice president; Carl Weiner, Chanute, Kans., vice president of eastern Kansas; A. W. Ambrose, Cities Service Oil Co., Bartlesville, Okla., vice president for Northern Oklahoma; Lloyd Noble, Noble Drilling Co., Ardmore, Okla., vice president for Southern Oklahoma; W. R. Wallace, Magnolia Petroleum Co., Oklahoma City, vice president of western Oklahoma; and Clarel B. Mapes, secretary-treasurer.

At the general session of the association immediately following the Kansas-Oklahoma division meeting, George Sawtelle, Kirby Petroleum Co., Houston, Tex., was elected vice president for Texas to replace Mr. Hawkins, Magnolia Petroleum Co., Dallas, Tex., who asked to be relieved because of other duties. All other officers were reelected. They were: J. D. Collett, Fort Worth, Tex., chairman of the board; J. C. Hunter, Abilene, Tex., president; Robert S. Kerr, Oklahoma City, Okla., first vice president; F. O. Prior, Tulsa, vice president for Oklahoma; D. W. Harris, Shreveport, La., vice president for Louisiana-Arkansas; Ralph Pryor, Wichita, Kans., vice president for Kansas; Van S. Welch, Artesia, N. M., vice president for New Mexico; and Clarel B. Mapes, secretary-treasurer.

BURDETTE BLUE
Elected president, Kansas-Oklahoma division of Mid-Continent Oil and Gas Association

Well-Completion Practices Discussed Before A.P.I. Chapter

Fifty members of the Northeast Oklahoma chapter of the American Petroleum Institute heard three speakers discuss various phases of well completions at a meeting in Tulsa on December 10. H. W. Ladd, Stanolind Oil & Gas Co., presided at the meeting.

P. E. Fitzgerald, Dowell, Inc., Tulsa, discussed "The Electrical Pilot as an Aid to Selective Acidizing." He pointed out that with this new tool it was possible to tell which section of the pay was taking the acid. The device has many other applications.

"Well Completion by Mud Analysis" was the title of a paper delivered by E. R. Albert, Baroid Sales Co., Tulsa, in which he showed specific examples where it was possible to complete wells successfully when using a log based on the analysis of the drilling fluid.

Some of the phenomena, results and operation of gun perforators were discussed by Val C. Forsyth, Lane-Wells Co., Oklahoma City, Okla., in his paper on "Gun Perforating."

Announcement was also made of a proposed field trap sponsored by the Phillips Petroleum Co. which would take in the Billings field and some of the fields in Osage County, Oklahoma. Announcement of details will be made later.

Committees in charge of the annual spring meeting of the Mid-Continent district which will be held in Tulsa March 26 and 27, 1942, were also announced.

Safety Council Discusses Methods of Vapor Control

The second meeting of the year for the Mid-Continent Petroleum Safety Council was held in Tulsa December 12. Members held an open forum discussion on general conditions in the industry during the morning. Following lunch those in attendance heard papers on safety appliances for controlling vapors on production stock tanks and on dermatitis as an industrial disease. C. L. Barrett, Gulf Oil Corp., Tulsa, presided at the meeting.

Advisability of holding safety meetings among employes and the best type of meeting were discussed. Members agreed that during the present emergency the meetings for the exchange of ideas should be continued but that night meetings should be tried. Next meeting is now scheduled for Tulsa on January 23, 1942.

CALENDAR

December

INTERSTATE OIL COMPACT COMMISSION, Biltmore Hotel, Oklahoma City, Okla., December 19-20.

1942

January

SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting and engineering display, Book Cadillac Hotel, Detroit, Mich., January 12-16.

February

AMERICAN PETROLEUM INSTITUTE, Division of Production, southwestern district, spring meeting, Adolphus Hotel, Dallas, Tex., February 26-27.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, committee week and spring meeting, Cleveland, Ohio, March 2-5.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, spring convention and refiners and suppliers exhibit, Hotel Severin, Indianapolis, Ind., March 3-5.

WISCONSIN PETROLEUM ASSOCIATION, annual convention and equipment show, Schroeder Hotel, Milwaukee, Wis., March 18-20.

WESTERN PETROLEUM REFINERS ASSOCIATION, thirtieth annual meeting, New Orleans, La., St. Charles Hotel, March 23-25.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, spring meeting, Houston, Tex., March 23-25.

April

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Cincinnati, Ohio, April 15-17.

SOUTHWESTERN GAS-MEASUREMENT SHORT COURSE, Norman, Okla., April 21-23.

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, William Penn Hotel, Pittsburgh, Pa., April 9-10.

NATIONAL PETROLEUM ASSOCIATION, thirty-ninth semiannual meeting, Cleveland, Ohio, April 16-17, 1942.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-seventh annual meeting, Cosmopolitan Hotel, Denver, Colo., April 21-24.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Washington-Youree Hotel, Shreveport, La., April 22-24.

May

NATURAL GASOLINE ASSOCIATION OF AMERICA, Mayo Hotel, May 13-15.

June

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, semiannual meeting, Cleveland, Ohio, June 8-11.

AMERICAN SOCIETY OF TESTING MATERIALS, Chalfonte-Haddon Hall, Atlantic City, N. J., June 22-26.

Transportation of large vessels, pipe and heavy equipment in the oil fields requires the use of a large number of trucks. These trucks are generally equipped to perform a wide variety of tasks instead of being designed for a particular job. They must also be capable of hauling heavy loads not only on the highway but up trails to well and plant locations

ENGINEERING & OPERATION

In This Section

DECEMBER 18, 1941

RED RIVER FIELD OFFERS EXAMPLE OF VALUE OF REPRESSURING
By D. H. Stormont ..... Page 33
Some in the oil industry continue to doubt the success of repressuring in spite of the progress reports on newer projects and claim that the ultimate story and the value can only be established after a number of years have passed. This article analyzes the results obtained by gas injection over a 12-year period in a reservoir which is now nearing depletion.

THE FUTURE OF OIL-PRODUCTION METHODS
By D. R. Knowlton ..... Page 35
Improvements and changes in production equipment and operation are difficult to predict but there are definite trends which indicate to some extent what the future holds.

NEW SHELL PIPE-LINE STATION DESIGNED FOR EASY MAINTENANCE
By T. P. Sanders ..... Page 37
Compactness, flexibility, and simplicity are outstanding in the construction of the Ventura, California, pipe-line station of the Shell Oil Co., Inc. Much thought was given to the planning before construction was started. All piping and equipment are easily accessible for maintenance work.

ABSTRACTS OF A.S.M.E. PAPERS ..... Page 38
A portion of the papers delivered at the A.S.M.E. meeting at New York contained material of interest to petroleum engineers.

TWO TYPES OF FILTRATION ARE COMBINED IN VALVOLINE PLANT
By J. P. O'Donnell ..... Page 40
A substantial reduction in cost over the conventional contact method is obtained through the use in a single operation of both contact and percolation filtration. A marked increase in yield is also obtained.

OPERATING IDEAS ..... Page 43

REFINING IDEAS (that save $ $ $) ..... Page 44

PROGRESS IN METALS—By W. L. Nelson ..... Page 46

Red River Field Offers Example Of Value of Repressuring

By D. H. STORMONT

IN the Red River field of Tillman County, Oklahoma, a 270-acre repressuring project has been under way for more than 12 years. Despite natural barriers of lenticular sands and the fact the repressured area is located in a river bed, the project offers an excellent example of the value of repressuring. Oil production has fallen off steadily for the past 10 years and has now reached a point where it is expected that operations will be abandoned within the next few years. Since the project is nearing depletion it is possible to show what has actually been accomplished by repressuring.

The Red River field is located largely in the bed of the Red River, about 7 miles northwest of Burkburnett, Tex.; it was discovered in October 1919. A structure map prepared by the U. S. Geological Survey, with contours on top of the producing sand, shows the field to be located on two structural highs with a pronounced syncline separating the two producing areas. Preliminary plans called for repressuring of leases in both the middle and west areas, but after an 8-month trial the results in the middle portion were not encouraging and operations were abandoned. Thus the following deals only with the 270-acre block in the west field (see accompanying map) which has produced about 90 per cent of the oil withdrawn from the whole field.

This tract prior to the application of repressuring in May 1929, produced 4,375,300 bbl. of oil, or a yield under primary recovery and vacuum operations of 16,200 bbl. per acre. Since the start of gas repressuring an additional 2,805,000 bbl. have been produced, total oil recovery on September 1 of this year being 7,180,400 bbl. or a yield of 26,600 bbl. per acre. The pay section averages about 48 ft. for the whole 270-acre block; thus recovery per acre-foot has been 550 bbl.

From extrapolation of the accompanying production decline curves, it is estimated that had repressuring not been applied total ultimate oil recovery would have been about 5,729,000 bbl. As is shown in Fig. 1, the field's normal rate of decline in oil production can be estimated from the portion of the curve between 1921 and 1925, prior to the well deepening and new-well drilling program which started at the first of 1926. Application of this rate of decline from the new peak production of 1927-1928, indicates the field would have reached a production of 100 bbl. daily early in 1937. As its economic limit is approximately 100 bbl. daily, the field may have been abandoned after producing about 5,729,000 bbl.

Adoption of repressuring, however, has resulted in raising the yield by about 1,479,000 bbl., or an increase in yield per acre of almost 5,400 bbl. Furthermore, as the project is expected to be continued at least 3 or 4 more years it is probable total recovery will be raised to approximately 7,492,000 bbl. Or the project will ultimately result in yielding about 31 per cent more oil (1,763,000 bbl.) than had repressuring not been applied.

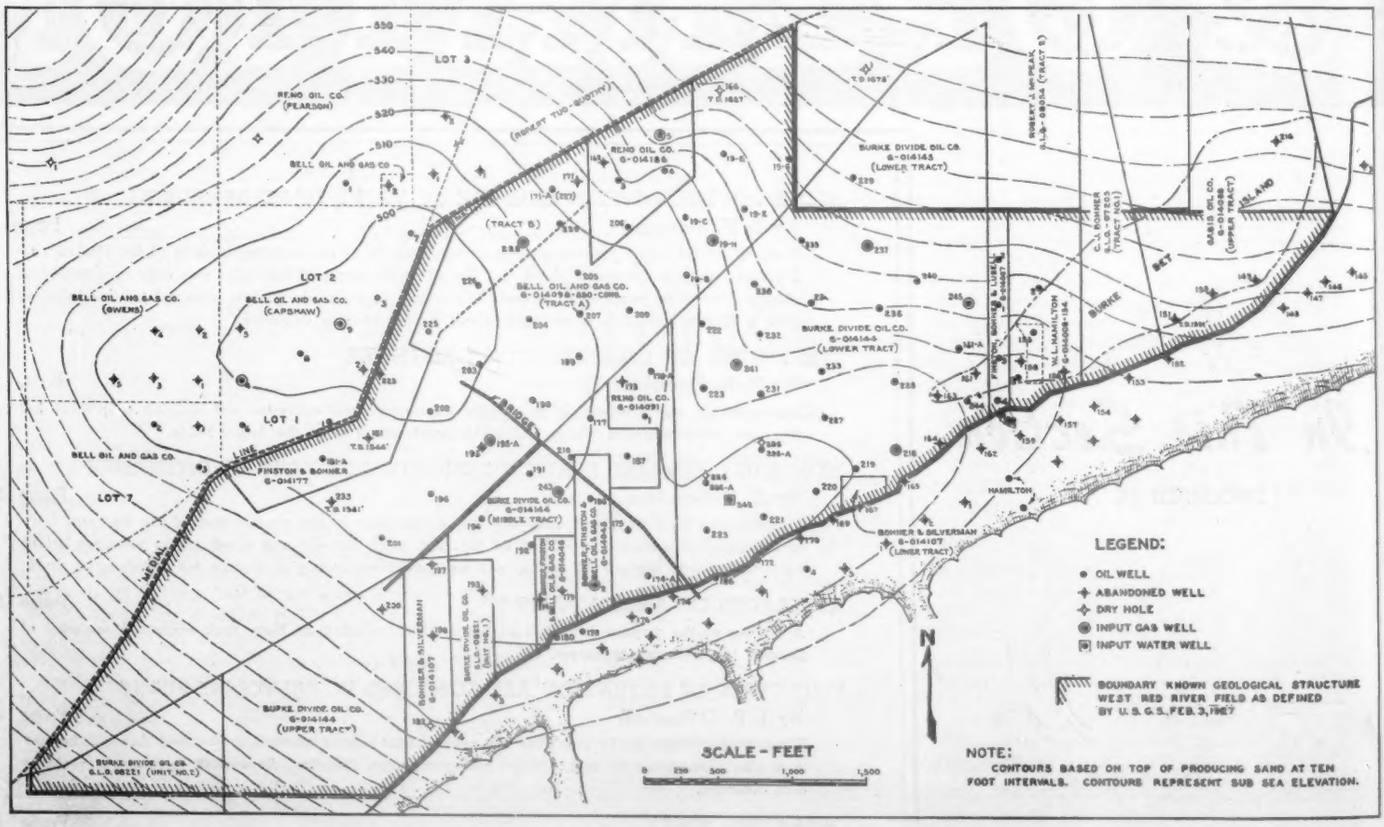
Structure and Sand Conditions

According to Mr. Coleman,* in this west area the strata rise gently from the syncline toward the southwest and attain their greatest altitude in the northwest portion of the field, in a flat dome whose west and north dips are fairly abrupt. The Cisco pay section occurs at depths between 1,500 and 1,625 ft. and ranges from 50 to 75 ft. in thickness. The section consists of sand and sandy shale divided by shale and lime breaks that are fairly regular and have been correlated over most of the field. Productivity of the wells is thought to be due to local sand conditions rather than to favorable structural position.

Cores obtained from 15 injection wells drilled

*Tom L. Coleman, The Oil and Gas Journal, March 19, 1931, p. 125.

Map of the West Red River field northwest of Burkburnett, Tex., in Tillman County, Oklahoma. Except for a period in 1932-33 the field has been under repressuring operations since May 1929. (Map is a portion of U.S.G.S. Mid-Continent Drilling Map 1015, revised November 7, 1941)


LOT 3
LOT 2
LOT 1
LOT 7
RENO OIL CO. (PEARSON)
BELL OIL AND GAS CO.
BELL OIL AND GAS CO. (BOWERS)
BELL OIL AND GAS CO. (CAPSHAW)
BELL OIL AND GAS CO. G-014098-B&O-COMB. (TRACT A)
(TRACT B)
RENO OIL CO. G-014186
RENO OIL CO. G-014091
FINSTON & BONNER G-014177
BURKE DIVIDE OIL CO. G-014164 (MIDDLE TRACT)
BURKE DIVIDE OIL CO. G-014164 (UPPER TRACT)
BURKE DIVIDE OIL CO. G-014145 (LOWER TRACT)
BURKE DIVIDE OIL CO. G-014164 (LOWER TRACT)
BONNER & SILVERMAN G-014107 (LOWER TRACT)
BURKE DIVIDE OIL CO. S.L.S.-08221 (UNIT NO. 1)
BURKE DIVIDE OIL CO. S.L.S.-08221 (UNIT NO. 2)
ROBERT J. MCPEAK S.L.S.-08054 (TRACT 6)
C. L. ROHNER S.L.S.-07855 (TRACT 7-B)
GABIS OIL CO. G-014088 (UPPER TRACT)
W. L. HAMILTON G-014008-194
HAMILTON
METZAL
BURKE
SCT
LEGEND:
OIL WELL
ABANDONED WELL
DRY HOLE
INPUT GAS WELL
INPUT WATER WELL
BOUNDARY KNOWN GEOLOGICAL STRUCTURE WEST RED RIVER FIELD AS DEFINED BY U.S.G.S., FEB. 3, 1927
N
SCALE - FEET
0 250 500 1,000 1,500
NOTE:
CONTOURS BASED ON TOP OF PRODUCING SAND AT TEN FOOT INTERVALS. CONTOURS REPRESENT SUB SEA ELEVATION.

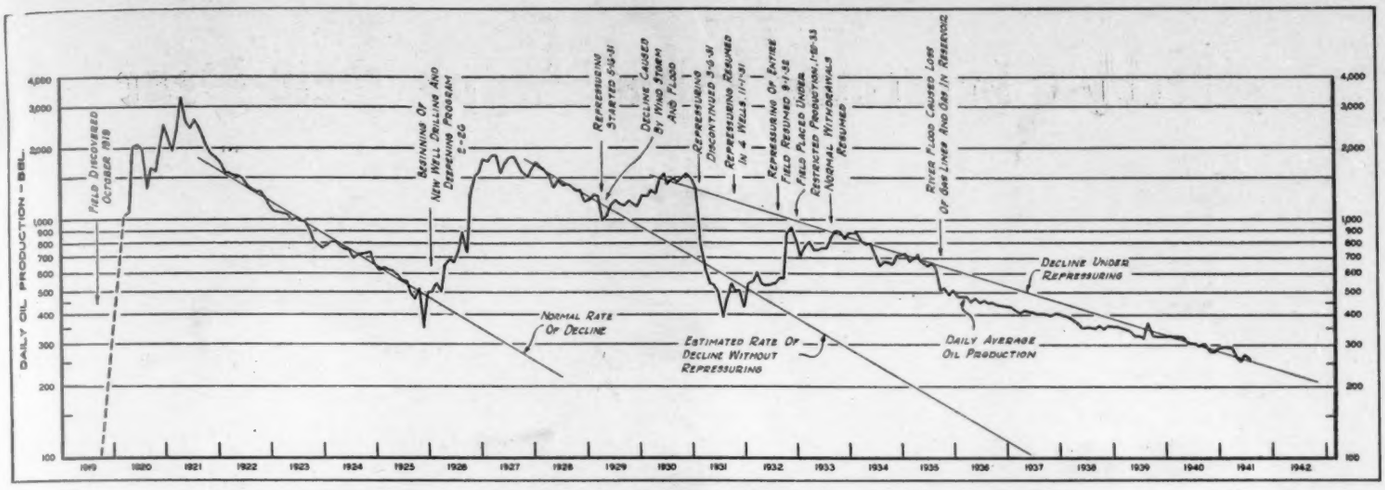

DAILY OIL PRODUCTION—BBL.
FIELD DISCOVERED OCTOBER 1918
REFINING OF NEW WELLS DRILLING AND DEEPENING PROGRAM 5-26
REPRESSURING STARTED 5-16-31
DECLINE CAUSED BY WIND STORM AND FLOOD
REPRESSURING DISCONTINUED 3-9-31
REPRESSURING RESUMED IN 4 WELLS 11-1-31
REPRESSURING OF ENTIRE FIELD RESUMED 8-1-32
FIELD PLACED UNDER RESTRICTED PRODUCTION 10-1-33
NORMAL WITHDRAWALS RESUMED
RIVER FLOOD CAUSED LOSS OF GAS LIFT AND GAS IN RESERVOIR
NORMAL RATE OF DECLINE
ESTIMATED RATE OF DECLINE WITHOUT REPRESSURING
DAILY AVERAGE OIL PRODUCTION
DECLINE UNDER REPRESSURING

Fig. 1—Daily oil production curve of the field since its discovery in October 1919, showing rate of decline under repressuring and estimated rate had repressuring not been applied

show that toward the center of the field there is about 70 ft. of productive zone, nearly all of which is sand with the shale and lime breaks being thin and few. In the wells located toward the edges of the field the productive zone thins to about 40 ft. in thickness and contains a smaller proportion of sand and more shale and lime. The productive sands are lenticular in character and do not extend over very large areas; offset wells often have different producing levels and vary widely in productivity. The sand is thicker on the slopes of the high than it is on the crest.

Productive limits are determined by pinching out of the producing sands, which grade off into sandy shale and shale, and not by the dip of the formations. Bottom-hole water was encountered at about 1,535 ft. in the early days of the field, but it is now lower than this level. There was no regular water level and when water was encountered it did not rise in the hole except on the extreme western edge of the field.

Plan of Operation

The original plan was for Bell Oil & Gas Co. to operate the project, under the supervision of the U.S.G.S. For this service Bell was to receive a fixed percentage of the increase in production over and above the amounts shown on future recovery curves under existing producing methods. This plan was to continue for 15 years.

In this west area practically all of the acreage and wells were held by three companies: Bell Oil, Burke Divide Oil Co., and Reno Oil Co. The plan suggested by Bell was accepted by the other two operators, so that gas lines were laid and gas started into the reservoir in May 1929. There were 76 producing wells at this time, all but 2 of which were involved in the project. The objecting operator's property was situated on the south edge of the field in the less productive area and did not materially affect the project.

A short time after the project was in full operation, however, the company from which Bell was purchasing its input gas requirements increased the rates for the gas. This would have caused the project to collapse under the original plan so that a cooperative unit was formed by the three operators. Repressuring operations since have been carried on along those lines with Bell Oil & Gas Co. as the operator.

Initial Operation

When repressuring was started 10 injection wells were selected, located at fairly even intervals around the edges. This was done because it was considered the better plan to force migration of the oil from the edges of the tract toward the more productive wells in the center rather than to reverse the process. Also, the wells offered by the operators were almost invariably edge wells because they were of small productivity.

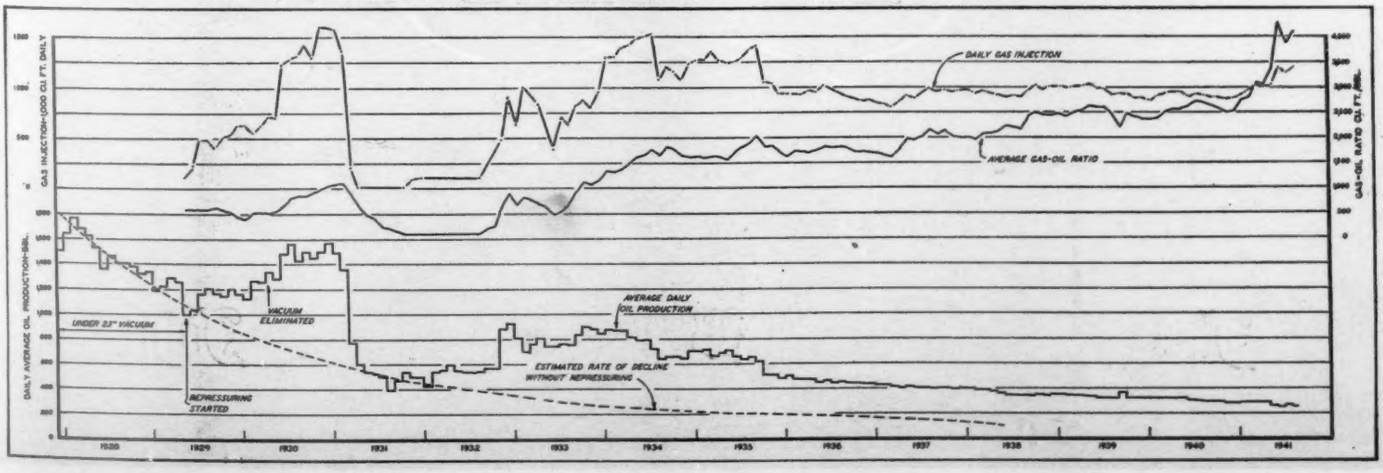
At the start of gas injection, vacuum of from 20 to 26 in. was being applied at the well heads. Experience had shown that any reduction in vacuum resulted in an immediate loss in oil production. Therefore, the vacuum was removed in stages, the time between and the amount of each cut being governed by daily oil production, so that the vacuum was not entirely eliminated until almost 1 year after start of repressuring Since then reservoir pressures have increased slowly and today injection pressures vary from 10 to 30 lb. A surprisingly small loss of daily production was noted when the vacuum was removed from the wells.

A noticeable result of the vacuum removal was in increase of the gravity of the oil produced. While vacuum was being used the average oil gravity in the field was 39°, but after the vacuum had been eliminated the average gravity was 41°, with many tanks running 42°. After the input gas had built up a pressure in the sands, the gravity fell just a little, the 42° phase being eliminated. Simultaneous with the cut in vacuum and the rise in gravity of the oil, there was a distinct drop in the gasoline content of the casinghead gas taken from the wells.

In starting the project some 60,000 cu. ft. of gas was returned daily through 10 input wells, and after 6 weeks the volume was stepped up to 200,000 cu. ft. daily. In several areas oil production was stimulated in varying degrees, and could

(Continued on Page 49)

Fig. 2—Curves of average daily oil production, average gas-oil ratio and daily gas injection of the West Red River field since repressuring was started in May 1929. Also shown is the estimated rate of decline in oil production had repressuring not been instituted



from

The Future of Oil Production Methods

By DON R. KNOWLTON
Phillips Petroleum Co., Bartlesville, Okla.

SINCE the discovery of oil in 1859, over a million wells have been drilled in the United States, ranging in depth from just a few feet to 15,504 ft. as the deepest well ever drilled, and 13,206 ft. as the deepest well now producing.

At the present time there are approximately 380,000 producing wells in the United States, with the daily average production exceeding 4,000,000 bbl. per day. I estimate that 30 per cent of this production flows naturally from the reservoir, and 70 per cent is pumped.

Most oil is pumped without the assistance of secondary recovery methods, such as gas injections, or water flooding. The equipment in use varies from wooden pumping rods in the old areas to very efficient and highly engineered individual pumping units.

Advancement of engineering knowledge in the petroleum industry has not been limited to equipment alone. By adapting the fundamentals of physics to the facts determinable through ever-increasing geological efforts, certain principles pertaining to the behavior of fluids in the oil reservoirs have been developed. By following the guidance of these principles and by properly governing our operations, we are able to push the oil, gas and water about with an amazing degree of effectiveness.

It is in connection with the development of this science of reservoir control, or engineering, in which I anticipate some splendid achievement in the future. Increased use of electric logging of new wells and the coring of producing sand, and recent developments in the instrument logging of old pools are making available to the engineer the data essential to develop a picture of the producing reservoir. This information will enable the engineer to determine the optimum rates of production and which wells in the reservoir should be produced. It will also enable the engineer to develop a greater ultimate recovery from the pool.

Secondary Recovery

The pictures which the engineering data develop as to the whole pool will enable the engineers to plan programs for secondary recovery, either by repressuring with natural gas or with the injection of water. In connection with the injection of water and gas considerable power is required and these projects are prospective users of electricity. On gas-injection projects the power is usually provided by gas engines, particularly in flush fields where plenty of gas is available. In old fields where gas for gas injection is scarce, it is not unreasonable to believe that electricity might be used for running the compressors in order to conserve the gas for injection.

The trend in recent years has been to lighter equipment for wells of the same depth. Two considerations contribute to this. Proration has limited the volumetric demand on the equipment. The second, and more significant, consideration is that through better engineering design and improved metallurgy the equivalent strength can be built with much less weight.

The accompanying article is an extended digest of the paper delivered by Mr. Knowlton before the Petroleum Electric Power Association at Dallas, Tex., December 4, 1941. He outlines some of the advances and changes which he foresees in oil producing operations.

To what extent the oil-field equipment can be made still lighter is unknown. I am sure that in some cases equipment has been too lightly designed and it will be necessary that there be a reversal and more strength and weight added to the equipment. As to other items, there is still room for making the equipment lighter. Experience tables based on the lighter designs will ultimately establish minimum standards.

I feel that the trend toward hydraulic pumps will continue and be expanded during the coming years. The standard method for producing a well, after it has ceased to flow naturally, has been to pump it with a reciprocal pump located at the bottom of the hole.

During the past 3 or 4 years, however, several pumps have been developed which are actuated by a hydraulic pressure applied at the surface. One of these consists of a reciprocating piston engine and pump which is located at the bottom of the tubing. Oil is pumped down a small string of tubing under pressure sufficient to actuate the power end of the pump. Other hydraulic pumps use gas as an actuating fluid. With a hydraulic-actuated system, a single power source can provide the energy requirements of many wells. In my judgment, the further use of hydraulic pumps will be one of the outstanding features of the production practices of the near future.

In those fields in which it is necessary to handle large quantities of fluid in order to recover the oil, the electrical submergible centrifugal pump has a very definite place, which has never been satisfactorily served by any other pump.

My experience with this pump indicates that it is not so successful where it is necessary to handle only small amounts of fluid. In such cases the per-barrel costs are not competitive with either the beam pumps or the hydraulic pumps. On the other hand, I feel that sooner or later this type of equipment will be adapted to the production of small quantities of fluid. If this can be done to the extent that its costs can be competitive with other types of pumps, there will be a widespread use of them. The submergible electrical centrifugal pump is subject to better automatic control, and this latter advantage will become of increasing importance.

Today, we are looking towards 1942 with the idea of producing 4,400,000 bbl. of crude oil every day in the year, and using 30 per cent less steel to do it. The petroleum coordinator's office has very properly recognized that one of the most effective ways of conserving steel is to drill fewer wells, that is, one to 20 acres, or one to 40 acres, instead of one to every 10 acres as has been the practice for so many years.

We have had considerable wide spacing during the past few years but there will be more of it required by the national emergency. I sincerely believe that just as proration taught the industry the effects of efficient rates of production and reservoir control, so will wide spacing teach the industry that, within reasonable limits, the amount of oil to be recovered from a particular pool is independent of the number of wells drilled in the pool.

Another production practice which the industry has begun to accept more and more, and which will find considerable support from the coordinator's organization, is that of producing each oil pool as a unit.

But where the royalty owners are scattered to the ends of the earth, it would be a practical impossibility to unitize fields by contract. While we are in the realm of predictions, I would like to forecast that before long the oil-producing states will enact laws to the effect that when the oil companies can agree on a plan of unitization, the royalty ownerships will be communitized by law.

Unit Operation

There are still a few respectable elements of the industry opposed to the practice of unitization of oil pools. While it is not proper to discuss here the merits of unitization, it is my considered judgment that the standard objections named by its opponents are more superficial than real.

The fact remains that from 25 to 50 per cent more oil can be recovered from the ground through unit operation at a greatly reduced cost and the question of the distribution of the benefits is one which must be subjugated to the paramount obligation to produce the greatest quantity of economically recoverable oil from each source of supply at the least possible cost to the public.

The last-referred-to obligation is one which is owed by the industry to the public, and arises from the fact that petroleum is an irreplaceable natural resource. New reserves of petroleum are not being discovered at the rate at which they are being consumed. While it is true that the total amount of known petroleum reserves has remained practically steady at about 19 or 20 billion barrels for the past 2 or 3 years, only a part of the consumption has been offset by new discoveries, the remainder being accounted for in revising upward the estimates of already discovered reserves, and additional oil becoming available to production by reason of better production methods. Much wildcat drilling will be necessary during the coming years if discoveries are to keep pace with consumption. When the returns from wildcat drilling cease to justify the expenditures, we will then be approaching the use of oil shales as the source of our motor fuel.

From a mechanical standpoint, the most significant change which the future will bring in oil production will be the widespread adoption of automatic controls. Because it is so readily adaptable to automatic control, an increased use of electrical power by the oil industry is bound to follow. I feel that we are still in the frontiers in the use of electrical power and electrical equipment. The next few years will see many developments which will make possible the pumping of deeper wells, and the continued economic pumping of stripper production.

Merry Christmas
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HOUSTON, TEXAS, U. S. A.

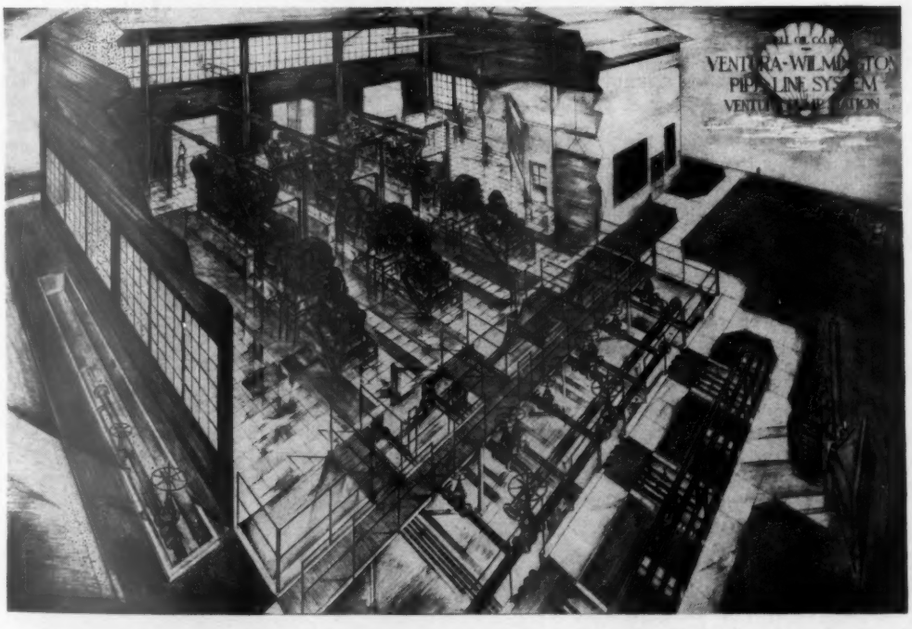
New Shell Pipe-Line Station Is Designed for Easy Maintenance

By T. P. SANDERS

THE pipe-line station constructed at the Ventura end of Shell Oil Co., Inc.'s new Ventura-Wilmington crude-oil line is an excellent example of the simplicity, compactness and flexibility which is possible with complete planning of all details in advance of ground breaking. The thought given to making every portion of the piping and other equipment readily accessible is expected to result in maintenance efficiency and economies throughout the life of the station.

Built to aid in relieving the world shortage of tankers, the Ventura-Wilmington line has been delivering 25,000 bbl. of crude per day since October 11. This volume is being handled against a pressure of 1,000 lb. by two of the three pumps installed in the Ventura station. With all three pumps operating in series 29,000 bbl. per day can be delivered through the line, the starting pressure in this case being 1,160 lb.

Each of the three pumping units in the station consists of a 275-hp. gas engine which is connected through a stepup gear to a four-stage pipe-line centrifugal pump. The pumps take suction from a 12-in. line which joins the station with the nearby Ventura tank farm. The piping and valve arrangement makes it possible to compound the pumps in any desired manner. They discharge into the 10-in. i.d. pipe line which runs 84 miles without booster stations to Shell's Wilmington refinery.



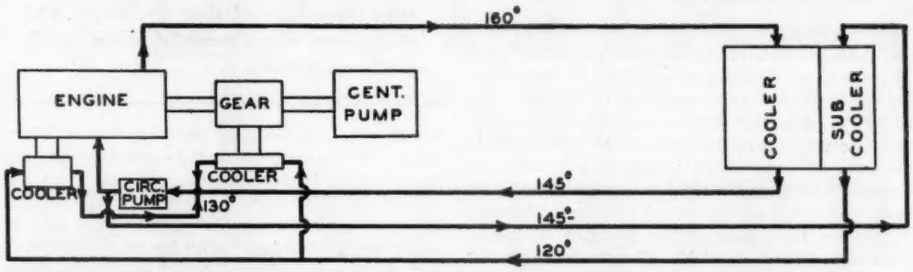
Phantom view of interior of the Ventura pump station on the Ventura-Wilmington pipe-line system

Cooling-Water System

The water-circulatory system for cooling the cylinder jackets, the crankcase oil, and the stepup gear oil is of novel design. Two water circuits make cooling water available at two different temperatures, but only one pump is required for the complete cooling system.

Water emerges from the engines at a temperature of 160° F. and passes through the larger compartment of a radiator-type cooler which is located outside of the building. Returning water is pumped into the engine jackets at a temperature of 145°. Since water at this temperature is too hot for cooling the engine crankcase oil or the stepup gear oil, a portion of the flow is taken off after it has passed through the circulating pump, and thus is led back to the radiator-type cooler for further cooling in the smaller compartment. It emerges at a temperature of 120° and passes through the oil coolers at the engines and at the stepup gears. With its temperature raised to 130°, it then merges with the 145° water being pumped to the engine jackets.

The radiator-type coolers at the new Shell station use fans which are driven by individual engines. Since there are two radiator units for the three pumping units, and since the piping is arranged so that either radiator can cool any two of the pumping units, it will be apparent that the accompanying diagram and the above description of the cooling-water flow cycle have both been simplified to show the scheme rather than the piping detail.



Schematic diagram of the water-circulating system used at Shell's new Ventura pipe-line station. One pump circulates water at two different temperatures for cooling the engine jackets, crankcase oil and stepup-gear oil

All Piping Exposed

There are no buried lines at the new Shell station. All oil lines, fuel-gas lines, water lines, air lines, gage and meter lines are laid below floor level in troughs and pipe pits so that they can be painted easily to guard against corrosion. In spite of its capacity the station is designed in such a compact manner that the building and yard only occupy an area 115 by 82 ft.

A portion of the steel and corrugated-iron building is divided off for an office. This is of modern design with plastered walls and wide windows through which the entire station can be viewed. On one inside partition of the office is an instrument board which indicates and records the operating conditions at all of the pumps and engines. This instrument panel is backed by a counterbalanced door which is raised in order to expose the back of the board when repairs or adjustments are necessary.

Construction of the station was completed under contract by J. B. Gill Corp., Ltd., of Long Beach, following the design and specifications laid down by the engineering department of Shell Oil Co., Inc. All major oil valves used were of special double-disk internal construction. The engines were equipped with air filters and snubber-type exhaust mufflers which completely eliminate exhaust noise.

Oil Strainer Used

An oil strainer is installed on the suction line to the pumps. This is a 12-in. twin strainer, and is used to prevent any foreign object from being carried into the centrifugal pumps where it might damage the impeller.

Meters used for gaging the oil output are positive-displacement instruments. Spring gages are used for indicating the operating pressures.

Coming into existence partly as an oil-supply defense measure, the new station's design shows consideration for another national problem, namely the metal shortage. The compact design has helped to conserve present metal supplies, while the elimination of corrosion sources should effect labor and materials savings in the future.

Abstracts of A.S.M.E. Papers

The accompanying abstracts are of papers delivered at the A.S.M.E. meeting in New York City which are of interest to men in the oil industry. While in many cases they are not directly connected with drilling and production they approach similar problems and do present some material which is directly applicable.

Torsional and Flexural Buckling Of Bars of Thin-Walled Open Section Under Compressive and Bending Loads

By J. N. GOODIER (Professor of Mechanics, Cornell University, Ithaca, N. Y.)

THE observed behavior of torsionally weak columns in buckling by twisting rather than, or as well as, bending is analyzed in this paper on the basis of a hypothesis due to Wagner. The theory is simplified, and extended to the general section, where results simpler than some already obtained by Kappus are given. It is further extended to bars, restrained by flexible sheets, and bars with constrained axes of rotation. Wagner's hypothesis is applied to the problem of lateral buckling, where it yields the accepted theory for symmetrical sections, but indicates results of novel form for unsymmetrical cases. Similar results are obtained in the problem of eccentric thrust, whatever the section.

●

Embrittlement of Boiler Steel—Experiences With the Schroeder Detector

By T. E. PURCELL and S. F. WHIRL (Duquesne Light Co., Pittsburgh, Pa.)

IN 1928, faced with the discovery that boilers of the authors' company were being attacked by so-called caustic embrittlement, steps were taken to combat the evil. Experiences with this metal disease, since that time, are described. More specifically, however, the paper treats with results of 26 tests in which the Schroeder embrittlement detector was used on boilers, operating under varying conditions of water treatment, pressure, time, and specimen composition.

●

Characteristics of Centrally Supported Journal Bearings

By E. O. WATERS (Associate Professor, Mechanical Engineering, Mason Laboratory, Yale University, New Haven, Conn.)

THE primary purpose of the study, reported in this paper, is to determine the load capacity and friction of journal bearings having arcs of contact of 80° to 120°, eccentricity ratios ranging from zero to unity, length-width ratios ranging from zero to infinity, and central support. Essentially, it is a continuation of the work published by Needs, which covered the range of eccentricities from 0 to 0.8, but with two important differences, i.e., (1) the results have been obtained by mathematical, rather than experimental, solution of the Reynolds equation for two-dimensional viscous flow in a thin channel; (2) the matter of negative pressures has been dealt with in the manner advocated by Swift. In other respects, the treatment of the fundamental variables is akin to that which is found in the majority of journal-bearing- and fluid-film-lubrication papers, published by the society, e.g., the journal radius, journal velocity, mean clearance, eccentricity ratio, and oil viscosity are assumed constant for any given bearing, and the oil channel is of rectangular plan form.

●

Field Data From the Embrittlement Detector

By E. P. PARTRIDGE, C. E. KAUFMAN, and R. E. HALL (Hall Laboratories, Inc., Pittsburgh, Pa.)

THIS paper constitutes a progress report based on test data from 100 embrittlement detectors installed on operating boilers to ascertain the embrittling tendency of the respective boiler waters. Not until more than 10 years after the well-known sulfate-alkalinity ratios were formulated and published in the A.S.M.E. Boiler Code of 1926 were means devised whereby the tendency of an actual boiler water to cause cracking could be tested. Mention is made of the apparatus designed for laboratory use, developed by Straub and Bradbury, and the embrittlement detector of Schoeder and his associates for installation on an operating boiler. The tests reported by the authors were carried out by means of the latter. The procedure followed and the effects of various inhibitors used are given in some detail, the results being presented in the form of a series of graphs. The authors in conclusion suggest that boiler operators, faced with the problem of embrittlement cracking, take advantage of the testing methods now available, and determine the conditions which they can economically and effectively maintain in their boilers to minimize the difficulty.

●

The Mechanism of Cavitation Erosion

By T. C. POULTER (Scientific Director, Armour Research Foundation, Chicago, Ill.)

AFTER pointing out the interrelation between corrosion resistance, caustic embrittlement, fatigue, creep, and other phenomena of metals, the author cites the results of experiments on glass and quartz rods, subjected to high liquid pressures, as indicative of the action which probably occurs in cavitation erosion. To demonstrate the mechanism of cavitation on this basis, an investigation was conducted, in which tests were made on gray-cast-iron specimens in water, alcohol, glycerin, and paraffin oil, using a magnetostriction oscillator as the source of energy. The results of the tests which are reported bear out the theory. Materials and protective coatings which reduce cavitation erosion greatly, and the effect of the presence of hydrogen in the liquid are discussed.

●

Graphical Analysis of Impact of Elastic Bars

By K. J. DeJUHASZ (Professor of Engineering Research, Pennsylvania State College, State College, Pa.)

THE object of this paper is to apply the methods of graphical analysis to the problem of longitudinal central impact of elastic bars, partly to compare the results of the graphical procedure with those arrived at mathematically, and partly to treat complicated cases not readily amenable to mathematical treatment.

●

Torsion of Multiconnected Thin-Walled Cylinders

By F. M. BARON (Assistant Professor of Civil Engineering, Yale University, New Haven, Conn.)

THE author develops an arithmetical procedure for the analysis of problems of torsion. The method of analysis presented is one of successive approximations. The solution to a problem is guessed at and successively corrected until the controlling conditions of static equilibrium and of continuity of deformation are satisfied. The convergence is reasonably rapid but may be hastened with a little judicious guessing. The problem under immediate discussion is a straight hollow member with constant cross-section subject to a torque about the longitudinal axis of the member. Other applications and extensions of the method presented are suggested at the end of the paper. The arithmetical procedure is illustrated by an example.

●

Studies of Heat Transmission Through Boiler Tubing at Pressures From 500 to 3,300 Lb. per Sq. In.

By W. F. DAVIDSON, A. A. MARESON, P. H. HARDIE, A. R. MUMFORD, C. G. R. HUMPHREYS and T. RAVESE (Consolidated Edison Co. of New York, Inc.)

THIS paper is a report on studies of heat transfer and pressure drops in steam generating tubes at pressures from 500 to 3,300 lb. per sq. in. and under exposure to furnace heat in large steam generating units. Specific problems investigated include the influence of variations of the steam-water ratio and of variations in tube dimensions (scale-factor) on tube-metal temperatures and on pressure drop. The test conditions were extended in some cases to include water below the saturation temperature. Most of the test surfaces were in the form of flat spirally coiled tubes, but for comparison one straight tube 50 ft. long was tested. Some data relate to tubes operating under conditions often associated with operating failures.

Supplementary investigations reported on include: pressure drop of water near saturation temperature for pressure range 250 to 2,500 lb. per sq. in. through flow distributing orifices de-

(Continued on Page 49)

Cut-Oil Problems in

Ralph C. Bussett
2301 South Grand
Phone 6364
Monroe, Louisiana

John H. Berkey
Blake's Hotel
Olla, Louisiana

ARKANSAS LOUISIANA AND MISSISSIPPI

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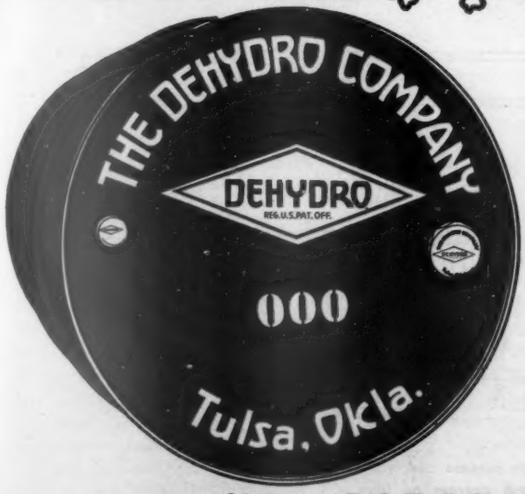

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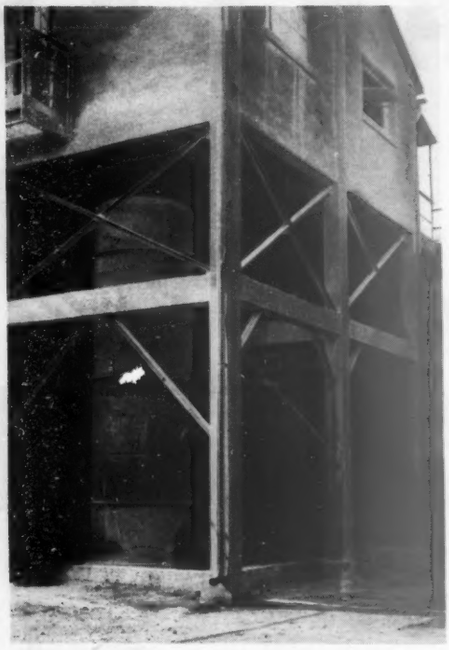
Two Types of Filtration Are Combined in Valvoline Plant



The clear-oil tank is shown in foreground and slurry tank behind it in this view of the new filter plant at the Valvoline Oil Co., plant at Butler, Pa. Both tanks were reclaimed

Feed and discharge lines for one of the two No. 10 Sweetland filter presses are shown in this view

By J. P. O'DONNELL

BOTH contact and percolation filtration are practiced in a single operation by the Valvoline Oil Co. at its refinery at Butler, Pa., thereby obtaining a marked increase in yields and a substantial reduction in cost over the conventional process of contact. The process, developed by A. S. Hagan, superintendent, is also notable in that it involves low installation costs, flexibility, and requires fewer cake dumps, with consequently lower oil loss than the conventional contact filtration which it parallels to a large degree.

The present installation at Butler is both experimental and commercial. While it is processing from 17,000 to 24,000 gal. per day, it was erected primarily to substantiate laboratory conclusions. Primary results were sufficiently satisfactory to make the unit an integral part of the refinery lube processing equipment. On the basis of these results, it is planned to add an additional press to the present two-press unit, and to install a duplicate three-press unit, which will increase both the capacity and flexibility.

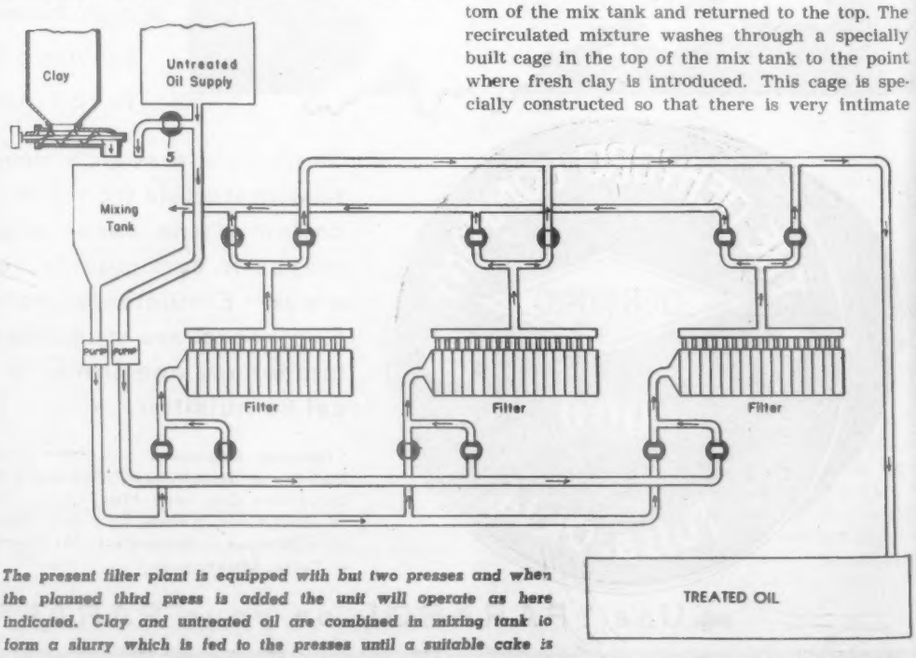
Laboratory tests reveal that the so-called "spent clay" from the refinery contact filter plant still retained a substantial degree of decolorizing efficiency, and it was in an attempt to utilize this efficiency that the combination contact-percolation process was developed. Simply, the process consists of building up a cake in the presses with a clay-oil slurry, running the slurry for a period in a primary run and then percolating untreated, raw oil through the cake, until its efficiency as a decolorizing medium is exhausted, in the secondary run. The use of two or more presses makes a continuous operation possible.

Equipment at the Valvoline unit consists principally of a clay bin and feeder, clear oil and slurry tanks, necessary pumps and two No. 10 Oliver-United Sweetland filter presses. Clay is fed to the mixing, or slurry, tank by a screw feed driven by a variable-speed motor. While any of the customary absorbent materials may be used, a synthetic clay, known as Magnesol, was used in experimental tests and is now being used in the commercial operation. This clay is of sufficient fineness that approximately 85 per cent will pass through a 200-mesh screen.

The bulk of the oil being charged at present consists of 125-viscosity Pennsylvania steam-refined cylinder stock run directly to the mixing tank from the pipe still. This oil is charged to the mixing tank at approximately 400° F. temperature, control being effected through bypass exchangers. Mixing the clay with the oil reduces the temperature to approximately 350° F., at which the filtering is carried on, in contrast to the much higher temperatures which characterize conventional contact filtration.

Mixing Accomplished by Pump Recirculation

In the filtering of the steam-refined cylinder stock the mixture is approximately 250 lb. of clay to 700 gal. of oil, or approximately 0.36 lb. per gallon. However, the proportion of clay to oil varies, of course, in relation to the oil which is being treated and in relation to the color which is desired. Mixing is accomplished by pump recirculation, the slurry being taken from the bottom of the mix tank and returned to the top. The recirculated mixture washes through a specially built cage in the top of the mix tank to the point where fresh clay is introduced. This cage is specially constructed so that there is very intimate



The present filter plant is equipped with but two presses and when the planned third press is added the unit will operate as here indicated. Clay and untreated oil are combined in mixing tank to form a slurry which is fed to the presses until a suitable cake is built up and then untreated oil alone is percolated through the cake until its efficiency as a decolorizing medium is completely exhausted. Oil sufficiently decolorized to meet specifications is run to the treated-oil tank while partially decolorized oil is returned to mixing tank for recirculation

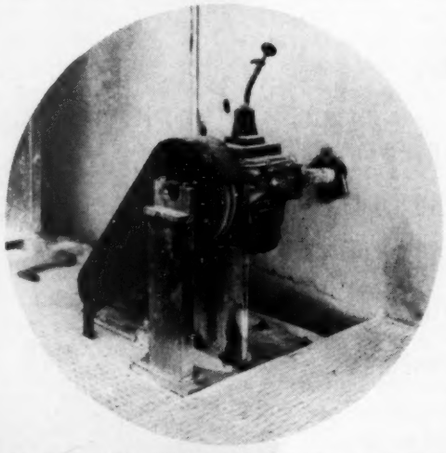
One of the two filter presses in the Valvoline filter unit

and uniform mixing of clay and oil. Construction of this cage also prohibits any large quantity of clay entering into the mixing tank at one time.

In operation, the system is first preheated and brought to operating temperature by circulating untreated oil of about 400° F. temperature. When the presses are heated circulation is stopped and clay-oil slurry is then pumped into the first press and circulated until the cake starts to form in the press, at which time the filtrate is allowed to leave the press and go to the clear oil tank. This process is continued until the cake is built to the proper thickness. When the proper size cake has been built the clay-oil slurry is discontinued and, at the same time the raw, untreated stock is turned into the press and the filtrate is then returned to the mix tank to be treated with clay to make up a clay-oil slurry for the next press, etc. Due to the improved color of this off-color filtrate the clay requirements are reduced considerably, thus lengthening the cycle time required to build the next cake and each cake thereafter. This results in fewer cake dumps and less oil loss as compared to the conventional method of dumping each cake immediately after being built up in each press. After the untreated, raw oil passes through the clay cake it is possible to allow the filtrate to pass to the clear tank for some time due to the fact that the oil is still on color specification, or the entire filtrate can be returned to the mix tank as stated before. While the operation can be conducted satisfactorily with a single press, continuous operation requires two or more presses since it is necessary to shut down each press for the cake removal.

Before the cake is removed from the press the oil is shut off and allowed to accumulate in the slurry mix tank during the cleaning period, which usually takes about 20 to 30 minutes. When the oil is shut off, steam is introduced into the press for the purpose of blowing out the entrained oil prior to dumping. The steam pressure used in this operation is about 30 to 40 lb. per sq. in. Continual steaming is permitted until the pressure is off the press, at which time the press is allowed to steam through until the cake is dry. The steam used while drying the cake is allowed to discharge from the press to a small blow case, thus eliminating contamination of the condensate with the hot oil in the slurry tank. As soon as the press is cleaned it is closed and put back in operation immediately, and the accumulated slurry of oil and clay is then turned in and the operation continued as before. This method of operation has enabled them to step up the throughput of their No. 10 Sweetland presses to almost twice the amount obtained from the conventional method, and at the same time maintain the required color specification with greatly reduced clay requirements.

At the present time the Valvoline Oil Co.'s plant is being charged with steam-refined cylinder stock about 75 per cent of the time, and with bright stock during the remainder. The unit has also run on Pennsylvania neutrals and petrolatum stocks. Normally the limited equipment now available would be used exclusively on steam-refined stock, but the bright stock is being charged due to the current high demand for high-flash material. This is accomplished because the unit is designed so that it can operate on the bottom stock for either the crude unit or the lube rerun unit.



The four-geared transmission controlling the rate of clay feed to the mixing tank is shown here. Clay is fed to the mixing tank by a screw-type conveyor

The chutes through which the spent clay is dumped into trucks for removal are shown in this picture. The truck at the right is filled with spent clay

When the third press is installed to expand the present equipment and a second three-press unit is added, the company plans to filter any product from either the crude unit or lube rerun unit, and finish it entirely in this one plant. Products from the present unit are being finished over bauxite in percolating filters. This is substantially a straining operation since virtually all of the decolorizing is effected in the presses. In the contemplated plant it is planned to finish the oils in the second three-press unit and products from it will be circulated through a blotter press before going to finished storage. It was planned to use a blotter press after the filter presses in the present unit, but it was not needed as the hourly centrifuge tests of the treated oil showed no deposits escaping through the filter screens. Expansion of the unit as planned will also necessitate the installation of a heater, since some of the charging stock, such as oil from the dewaxing unit, will be received at atmospheric temperature.

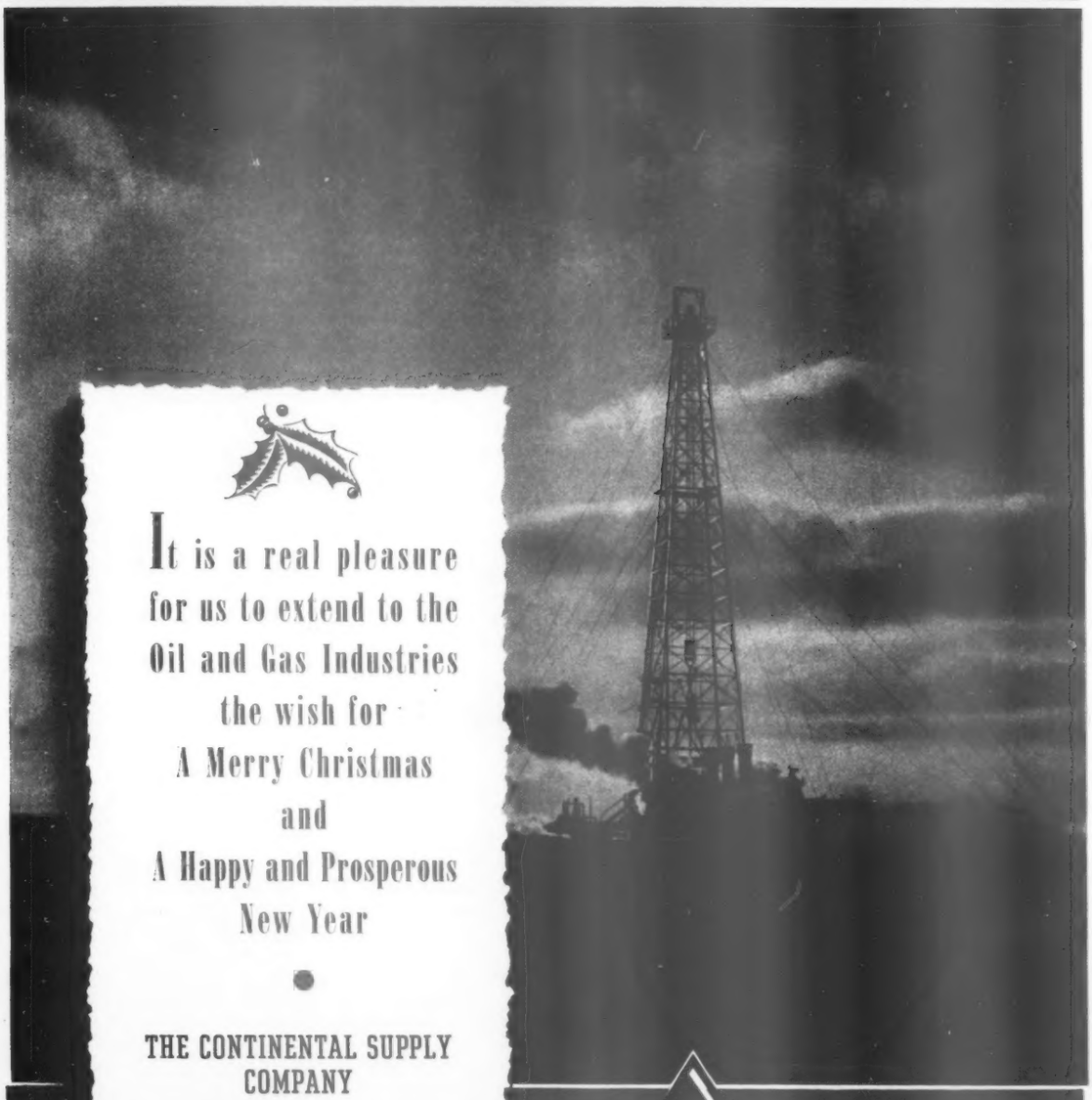
The Valvoline Oil Co. estimates its investment in the entire unit at $35,000. Part of it was constructed from equipment reclaimed from other sources, such as the clear oil and slurry tanks. The presses were formerly used in their original contact plant and in that service had a capacity of approximately 12,000 gal. per day. Duplex pumps are used for circulating the slurry and untreated oil, and for recirculating the slurry in the mixing tank. A standby duplex pump is set up to relieve either of the circulating pumps in case of a failure. All valves are manually operated.

Simplicity of Operation

The simplicity of the operation is indicated by the fact that only two men, an operator and an assistant, are required on each 8-hour shift. The principal need for the assistant is in dumping, since the clay dump is located approximately 1 mile from the refinery. The filters are on the second floor of the building and are set over chutes through which the spent clay is dumped directly into trucks for removal to the dump. The time cycle for the operation is exceedingly variable. When filtering 125-viscosity steam-refined cylinder stock it required about 5 to 10 minutes of circulation in starting to build the cake in the filters in order to insure clear oil. The clay-oil slurry is then fed to the press for a period of approximately 1 hour, and then is replaced by the untreated oil which may be processed through the press for a period of 2 to 2½ hours. The untreated oil which passes through the filter during the first 15 or 30 minutes is sufficiently clear, and still on color specification, so that it can be run directly to the clear-oil tank before converting the balance of the oil to the mixing tank.

While there are several advantages in this process, including low installation costs, its flexibility and the increased throughput, the greatest is in the more efficient use of the clay without rehandling equipment. In the original contact plant an average of a pound of clay was used per gallon of oil to get the desired color when processing 125-viscosity steam-refined cylinder stock. Now the clay requirements average from 0.25 to 0.35 lb. per gallon. Because of the greater on-stream time resulting from the percolation period, there are fewer cake dumps and consequently less oil loss. While this process is considered a forward step in the operation of a Pennsylvania refinery, it is likewise considered of major importance in the treating of vegetable, animal and other types of oil where color removal and oil losses are of the utmost importance. The flexibility of the process is obviously superior to that of conventional percolation.

Serving the Oil and Gas Industries



It is a real pleasure
for us to extend to the
Oil and Gas Industries
the wish for
A Merry Christmas
and
A Happy and Prosperous
New Year

THE CONTINENTAL SUPPLY
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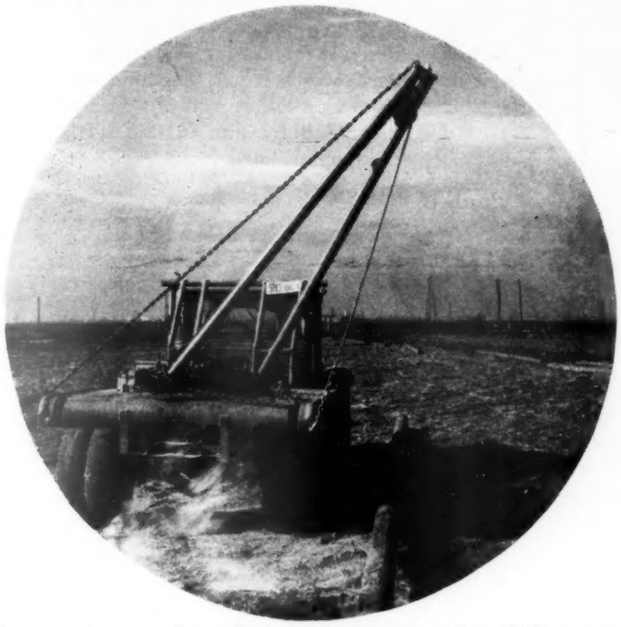
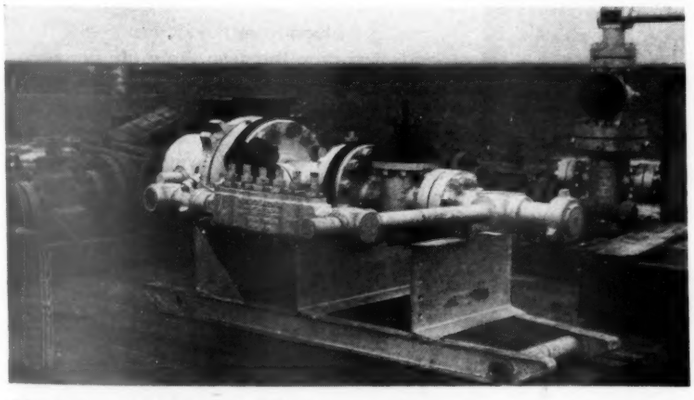
Operating Ideas

Revolving Gin Poles

Light trucks are frequently used for handling pipe sections while laying field-gathering lines; they are also often called on to handle

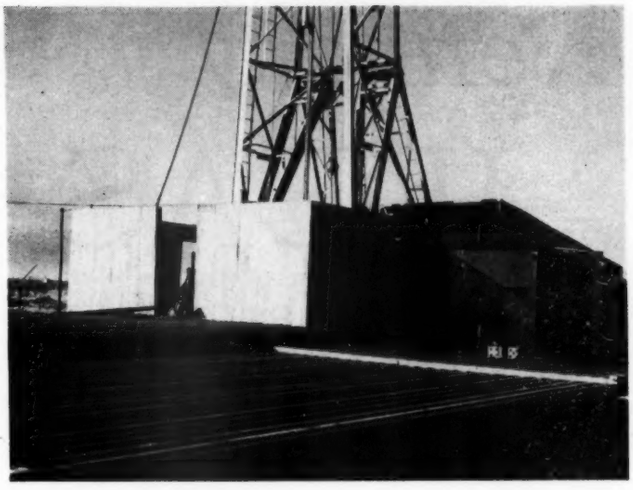


well connections and smaller equipment around a drilling rig. In many cases it is found that the maneuvering of the truck into position so the gin poles can be effectively used requires considerable time. One company has a special gin pole made which is fastened to the trailer bolster on the truck rather than on the tail board. The bolster is turned easily and a single chain is used to guy the poles.



Sled for Unitized Christmas Tree

Use of unitized Christmas trees has increased substantially during the past few years. These can be made up ahead of time and can be quickly installed at the well. However, the loading and unloading of the bulky trees is difficult as they cannot be slid or skidded easily. Frequently, unprotected trees are damaged while attempting to pull them onto a truck with a winch line. One operator uses a sled made from old derrick channel irons on which to carry the trees from the warehouse to location. The sleds are built so the trees are supported by the flanges. When moving, a chain and boomer is used for holding the trees on the sled.

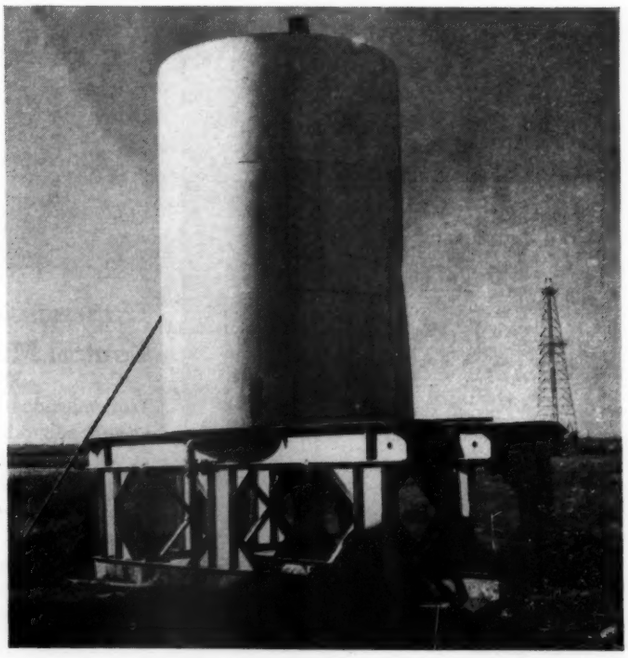


Sheet-Metal Windbreak for Rotary Rig

Considerable savings can be effected if the windbreaks used on rotary rigs during winter weather can be moved and rigged up on the succeeding location. Many different materials are used for this purpose, including canvas tarpaulins, boards and sheet metal. The accompanying picture shows a neat installation on a portable-mast rig made of sections of sheet metal on angle-iron frames. Installation or removal of a few bolts is all that is necessary to erect or tear down the windbreak. A special skid is provided for carrying the sections from one location to another. Sections shown in picture have been in use for over a year and show no signs of wear.

Substructure Used for Tank Foundation

Changes in derrick and rig styles cause engine foundations to be unsuitable for the work for which they were designed but this doesn't mean they are useless. One drilling contractor in an Oklahoma field used an unnecessary foundation to support the water tank used with the rig. Normally, the elevation necessary to flow the water to the rig is secured by building an earthen mound or a timber crib.



Refinery IDEAS

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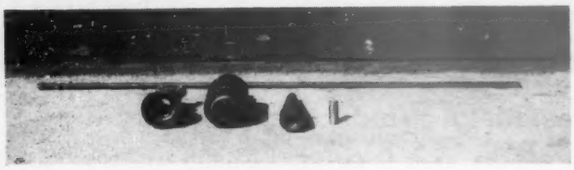
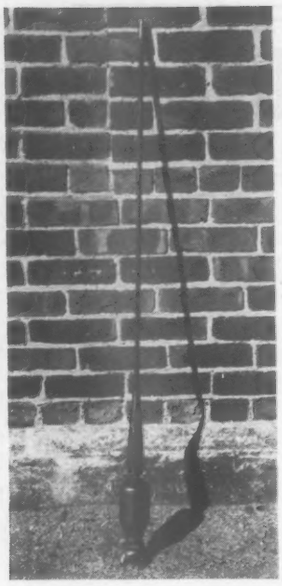




Turbine-Operated Cutting Tool Cleans Small Tubes

Small-diameter tubes are cleaned efficiently with this turbine-operated cutting tool shown dissembled at the left and assembled at the right. The first two pieces shown at the left are the turbine, the next is a tapered sleeve to protect the turbine-rod connection, and at the extreme right is the cutting tool. In the rear is a short length of hollow tube on which the cutting tool is mounted. An innovation here is the 3/16-in. hole drilled in the plate of the turbine which allows a stream of air to blow through the hollow tube and cutting tool and keep the tube clean.

Expanded Steel Steps

Expanded steel was used to make these steps on the outside of a refinery building. The steel is bought in large sections, cut to the desired size and the tread is welded to supports. It makes a serviceable, all-weather tread for outside steps.

Transmission Adapted to Control Mixing Rate

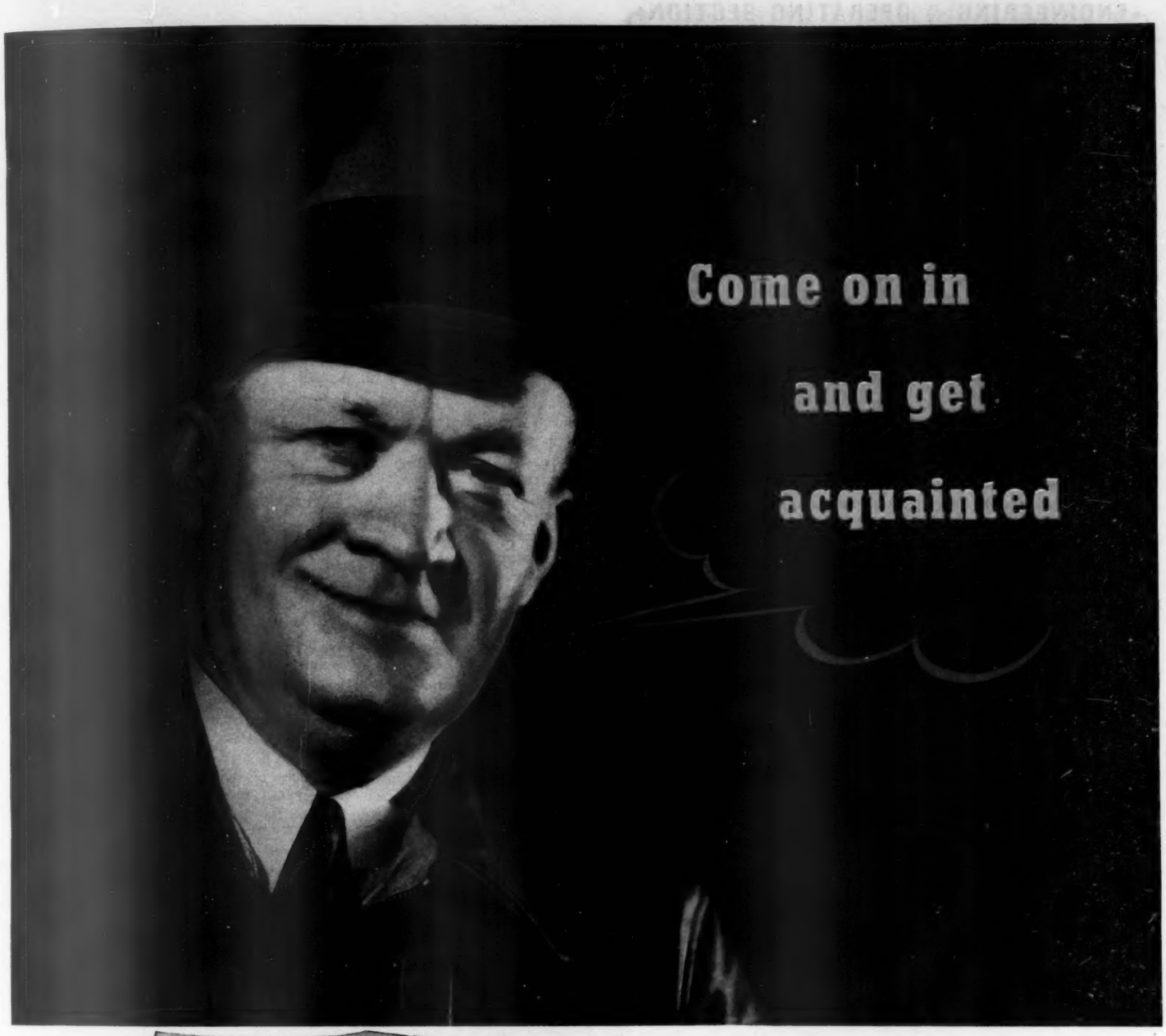
Transmissions from junked motor vehicles have been adapted for a variety of uses in oil refineries. In the instance illustrated here one of these transmissions is used to control the rate of mixing in a lubricating oil tank. Power is furnished by the electric motor at the left. It is transmitted through the transmission to a chain drive operating the mixer mounted on top of a tank in the rear.

Packing Gland Used on Heated Pipe Section

Steam pipes are often run inside wax or asphalt lines of larger diameter in order to keep the material fluid inside the larger pipe. To avoid a strain when temperature changes occur, the practice makes necessary the use of a flexible or slip-connection at regular intervals. This is accomplished in one refinery by using an ordinary packing gland on the turn of the oil line and through which the steam line passes. The gland is mounted with a flange connection as shown here. A smooth surface is machined on the section of steam pipe inside the gland by turning this section of the pipe on a lathe.

Turntable Directs "Traffic"

This "turntable" is used to send cartons of canned oil in either direction on the main conveyor as they are brought in on a lateral conveyor. It is suspended from the ceiling by a spring so that it can be raised, lowered or swung around easily by one man. The turntable consists of a conveyor section with rollers set so as to form a 90° curve. In the position shown it is set to take cartons from the lateral at the right and discharge them on the main conveyor transporting cartons to a lower flower. If it is desired to send cartons, coming in on the lateral, in the opposite direction on the main conveyor the "turntable" is raised and swung around so that the discharge end becomes the entrance end.



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Progress in METALS

By W. L. NELSON

Scrap Piles Contain Valuable Alloy Elements

ALLOY steels are used for such purposes that a large amount of scrap, turnings, etc., is produced. Between 20 and 40 per cent of the total tonnage delivered by mills to manufacturers is lost by machining and other processes of fabrication. In some instances the net losses may run to 70 per cent, and in complicated operations the loss may mount to even 80 per cent.

The International Nickel Co. has made a study of the possibilities of recovering nickel from scrap, and such information is presented in a recent edition of the company entitled Inco. Much of the following information has been quoted from this publication.

The nickel content in the case of automotive and similar type low-alloy steels runs from slightly over 1 per cent to over 5 per cent. In stainless steels the figure often may rise above 10 per cent. The alloying elements in these materials are mainly recoverable but in the past they have not been recovered in large amounts except perhaps in the case of the stainless steels. "They have been lost by a general practice of mixing the alloy steel scrap with carbon steel scrap and disposing of it as carbon steel. The extent of this practice is indicated by the fact that in the past year the residual nickel content in miscellaneous scrap as revealed by periodic examinations was approximately 0.05 per cent.

"This residual nickel enters carbon steel through alloy steel mixed with ordinary carbon steel scrap charged into the furnaces with pig iron. An average of 50 per cent scrap is used in the usual furnace charge. In other words, this nickel enters by mistake or failure to segregate alloy from carbon steel scrap. It is too low in content to add appreciably to the qualities of the steel. It remains buried.

"During the past year approximately 70,000,000 tons of steel were produced. At the average figure of 0.05 per cent residual nickel this tonnage would account for 70,000,000 lb. of nickel. This nickel might well have been salvaged had scrap segregation been systematically carried out over the years in which, through cumulative effect, this residual nickel was being built up.

Use of Scrap Mounts

"Steel production is mounting rapidly. During the first 8 months of this year, for instance, more scrap was used than in any other year of the steel industry's history. Hence the concern of both government and industrial leaders for an intensified salvage campaign.

"As indicated, segregation is the spring board for recovery of essential alloying elements. It means far more, of course, than segregation of alloy steel scrap from carbon steel scrap. No general specifications for such segregation according to percentage of nickel content have yet been completely outlined, though numerous divisions along these lines not only have suggested themselves, but also are being carried out.

"While all scrap containing nickel is valuable and should be segregated so that the nickel content can be salvaged, it should be obvious that scrap containing 2½ per cent nickel or higher is far more valuable to the producing mills than scrap which, through dilution, runs 1½ per cent nickel or under. On the basis of present nickel steel consumption it is estimated that up to 1,000,000 lb. of nickel a month may be saved for producers and users of these nickel steels by careful scrap segregation.

"It also has been found advisable to separate the various forms of scrap with small pieces, such as machine turnings, chips, flashings from forgings, and the like, being kept apart from heavier and larger pieces like bar ends, punchings, rejects, and the like. An important reason for this is that the smaller pieces are not as compact as the heavier and must be baled, briquetted, or otherwise processed to save space and make transportation more economical.

"Many manufacturers, especially those operating smaller plants handling both ferrous and nonferrous materials, already have had experience in segregating steel from brass, bronze, and other nonferrous materials. The segregation now urged merely carries this control further.

"The general method of handling is the obvious one of sorting the scrap at the machine, using suitably marked containers for the different types of scrap, and storing in separate bins—each bin holding material of one type or of several closely associated types. Thus, when the scrap is returned to the furnaces the nickel represents a known and fixed content which can be reclaimed and thus decreases the amount of nickel needed to provide the desired analysis in the resulting alloy steel. One enterprising alloy steel producer recently salvaged over 40 per cent of his nickel requirements for the month from nickel steel scrap.

"In many cases, obviously, salvage operations will require outlay for additional storage space, bins, and equipment. But this may be offset by the premiums allowed for alloy steel scrap over carbon steel scrap. These premiums run from $5 a ton for scrap containing 1¼ per cent nickel up to $20 per ton for scrap containing 5 per cent nickel. In some of the larger plants where salvage programs have been under way for some time, it has been found that the increased value of the scrap has paid, within a surprisingly short time, for the cost of new facilities and equipment and added operating costs."

Left: Machining and other fabrication processes account for 20-30 per cent of the original weight of metal. In some instances the percentage mounts to even 70-80. Right: Industry presents many pictures such as this. Alloy-steel scrap will constitute a large percentage of next year's alloy steel. (Courtesy International Nickel Co.)

Welding Terms

Cutting Processes

Two general types of cutting processes are used, namely, the chemical reaction type and the melting type.

The example of the chemical reaction type is the common gas cutting process of severing ferrous metals by means of the chemical action of oxygen on elements in the base metal.

In the melting type of cutting process, the metal is melted by external heat. Heat is usually applied by means of a carbon arc or a metal (electrode) arc.

Loss Through Corrosion

Carefully prepared estimates show the annual loss due to corrosion is more than 2 per cent of the ferrous tonnage in service. The oil and gas industries suffer a loss annually of $35,000,000 while the total loss to all steel users amounts to $100,000,000 each year. Loss through this cause is being reduced by the use of cathodic protection, approximately 750 units being in use.

Red River Field Offers Example Of Value of Repressuring

(Continued from Page 33)

be accounted for only by the injection of gas. Therefore, the volume of gas was increased to 500,000 cu. ft. daily. The results, however, were not satisfying; gas production increased rapidly but there was no corresponding rise in oil production.

The results indicated the injection gas was traveling through the depleted sands of the upper producing zone and bypassing the oil sands. To overcome this unsatisfactory condition the tubing was raised in several wells showing excessive gas return in an effort to raise the fluid level in the reservoir and thereby reduce bypassing of gas. This did not meet with success, and badly caved shot holes caused attempts to set packers likewise to be unsuccessful. Therefore, Bell Oil & Gas Co. decided to drill an injection well, realizing this would be necessary for the project to be a success.

The first input well was drilled near the crest of the structure in the central northwest part of the field, where the producing zone was known to have maximum thickness. Below a 5-ft. shale break a good oil was found at 1,536-63 ft., followed by a 2-ft. shale break and 10 ft. more of good oil sand. A limy sand at 1,575 ft. was followed by 21 ft. of coarse-grained sand with good oil saturation, and under this was a lime shell in which the hole was bottomed at 1,598 ft. Casing and tubing was set so as to confine the gas between the two lime shells.

Within 2 weeks after gas injection was started into this well, oil production on the lease jumped from 60 to 160 bbl. daily. Based on this conclusive evidence of the better results obtainable from drilling new input wells, 14 other pressure wells were drilled at most advantageous points throughout the block. After coring the producing zone, a shale or lime break above a saturated sand was selected in each input well as the place to set the tubing packer, thus insuring maximum contact of gas with the oil zone. No difference has ever been noted as to the comparable efficiencies of wells seated in lime or shale breaks.

These new injection wells were all completed and gas started into them before the spring of 1930. Gas injection, which had slowly been increased from 500,000 cu. ft. in October 1929 to 700,000 cu. ft. in April 1930 was stepped up to about 1,000,000 cu. ft. daily in June. Oil production responded immediately, raising from less than 1,300 bbl. daily in May to almost 1,500 bbl. daily in June. In July, following a slight increase in gas injection, oil production rose to a peak of 1,570 bbl. daily, or some 400 bbl. daily more than was being produced under vacuum.

Operations Suspended in 1932

Daily oil production continued to hover near the 1,500-bbl. mark during the remainder of 1930 and early in 1931. In March 1931, however, the gas company supplying the input gas to Bell raised the price from 10 cents per 1,000 cu. ft. to 20 cents. Such an increase made the cost of production rise to more than the operators thought was profitable, so that injection of gas was discontinued.

Previous to the suspension of gas injections (beginning in November 1930) it was decided to follow the program used in other projects of similar nature and use air as a repressuring medium. Accordingly about 375,000 cu. ft. of air was injected daily during the period between November 1930 and March 1931. The results were successful as far as oil production was concerned, but very shortly numerous accidents and breakage of equipment occurred which were attributed to the corrosive action of the mixed air and gas. Therefore when gas injection was stopped in March 1931, use of air was likewise discontinued.

As is shown by the production curves, a decided drop in oil output immediately took place and it is believed the 20-month lapse in repressuring operations resulted in the ultimate oil recovery being slightly lowered. For as is shown in Figs. 1 and 2, when full-scale gas injection was resumed in September 1932, oil production climbed to only a little above half of what it was prior to the discontinuing of gas injection.

Another incident tending to affect adversely the repressuring project was a river flood in the latter part of 1935. The flood washed out many of the gas lines and caused a 2-week shutdown of the field. This resulted in stopping the gas drive and loss of some reservoir gas. As is readily apparent from the production decline curve in Fig. 2, a drop of about 100 bbl. daily in oil production immediately took place when operations were resumed.

Gas Injection Volumes

Daily gas-injection volumes (including the volumes of air injected in the 1930-31 period) are shown in the curve on Fig. 2. Peak injection was reached in the latter part of 1930, although the volumes returned in 1934-35 were just slightly below this level. With the loss in oil production in the latter part of 1935, due to the flood, gas returned from the wells dropped from 1,250,000 cu. ft. to about 825,000 daily at the first of 1936. Purchased gas, which had averaged some 125,000 to 150,000 cu. ft. daily over this period, was not increased to offset the decline in field gas available for injection. As a result gas input dropped from around 1,300,000 cu. ft. daily to less than 1,000,000 and has hovered near that level since then. Of this daily injection volume, about 110,000 to 170,000 cu. ft. was purchased from the gas company.

When repressuring was first applied, oil in the River Bed reservoir was undersaturated due to the steady use of vacuum for several years. Accordingly, gas-oil ratios were comparatively low for a gas-drive field, being in the vicinity of 500 cu. ft. per barrel. With the start of gas injection, ratios at first fell off, but soon began to rise slowly and by September 1930 exceeded 750 cu. ft. When repressuring was suspended early in 1931, ratios declined rapidly and averaged around 70 cu. ft. per barrel until injections were resumed in the fall of 1932. Since that time the average gas-oil ratio has tended to increase very slowly and at the first of this year were about 2,600 cu. ft. per barrel.

Beginning in January of this year, as is shown by the curve, gas-oil ratios began to increase rapidly, possibly indicating a large-scale breakthrough of gas in the producing zone. By April the average ratio had increased from 2,600 to over 3,000 cu. ft. per barrel, and in June jumped to a peak figure of 4,250. Meanwhile, as is shown by the oil decline curve, output of oil has continued at about the same rate of decline.

The present oil output of about 275 bbl. daily is being produced by some 70 oil and 15 key-injection wells, or an average of approximately 4 bbl. per well per day. Many of the edge wells, however, produce in the neighborhood of only ½ bbl. daily. Economic limit of the field is estimated to be approximately 100 bbl. per day, thus it is probable the field will be abandoned in 3 or 4 years. Should it prove profitable to continue operations through 1946, a total oil recovery of 7,492,000 bbl. will have been produced, or a yield of about 27,700 bbl. per acre. As ultimate recovery under primary and vacuum operations would have totaled an estimated 5,729,000 bbl., the repressuring project by the time of abandonment will yield an additional 1,763,000 bbl. of oil.

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Abstracts of A.I.ME. Papers

(Continued from Page 38)

signed for forced circulation boilers; and heat transfer coefficients for the specific auxiliary equipment used.

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Graphical Solution of Fluid-Friction Problems

By E. S. DENNISON (Engineer in Charge of Development, Electric Boat Co., Groton, Conn.)

IT is customary to present fluid-friction data in the form of a diagram to log scale in which friction coefficient appears as a function of Reynolds number. Such data are widely applicable to physical circumstances other than those which pertained to the original experiments. The present paper describes a graphical procedure for utilizing data of this character, where analytical methods are not practicable, and resort is made to trial-and-error methods. Similar methods to that described may be found useful in other fields than that of fluid friction, provided the experimental data are capable of being represented in nondimensional form.

●

Results of Laboratory Embrittlement Testing of Boiler Waters

By F. G. STRAUB (Chemical Engineering Department, University of Illinois, Urbana, Ill.)

THIS paper reports the results of laboratory embrittlement testing of boiler waters as part of an investigation conducted under a cooperative agreement between the Utilities Research Commission, Inc., Chicago, Ill., and the Engineering Experiment Station, University of Illinois. The data presented have been released by permission of both institutions. The author briefly describes the testing apparatus and procedure. He then presents, in the form of curves, results of 1,300 laboratory tests on power-plant boiler waters, completing the paper with a general discussion of the results.

●

Studies on the Cracking Of Boiler Plate

By P. G. BIRD and E. G. JOHNSON (National Aluminate Corp., Chicago, Ill.)

THIS paper reports a series of tests on the cracking of boiler steel, based upon the use of the Schroeder embrittlement detector. Two types of waters were employed, one consisting of synthetic solutions and the other of boiler waters. The results are reported in comprehensive tables which show the amount and kind of inhibitor added, the water analysis, the amount of organic matter as indicated by the Tyrosin test, and other pertinent data. The tests show that, of the inorganic substances used to inhibit cracking, sodium nitrate is one of the best when combined with organic matter. With a given feed water, it was found that ever-increasing amounts of inhibitors are required as the number of concentrations increase. This unit should be used only by skilled operators.

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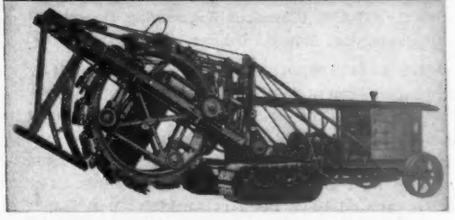

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Pipe-Line Activity

Dedication of Southeastern Pipe Line Stresses Defense Function of System

THE recently completed 456-mile petroleum products system of Southeastern Pipe Line Co. will be dedicated to the service of national defense at ceremonies to be held at the Chattahoochee terminal near Atlanta, Ga., on Friday, December 19. It will eliminate several days of tanker haul through open waters around the Florida peninsula from major refining centers in Texas to Atlantic ports.

The Southeastern system is the longest line making deliveries from tankers to inland distributing points.

In view of the present defense emergency, the 30,000-bbl. a day capacity line will be dedicated in dignified outdoor ceremonies. National leaders will participate, including Georgia's senior senator, Walter F. George, Congressman William P. Cole, Jr., of Maryland, chairman of the petroleum subcommittee of the House of Representatives; and Ralph K. Davies, of Washington, D. C., deputy petroleum coordinator.

The Southeastern pipe line, which begins at Port St. Joe, Fla., a naturally protected harbor on the Gulf of Mexico's St. Joseph Bay, is the largest pipe line completed in the world this year and the first petroleum products pipe line to be placed in operation in the Southeast. The line is a joint operation of Pure Oil Co. and Gulf Oil Corp. Construction of the system has been handled by Williams Brothers Corp.

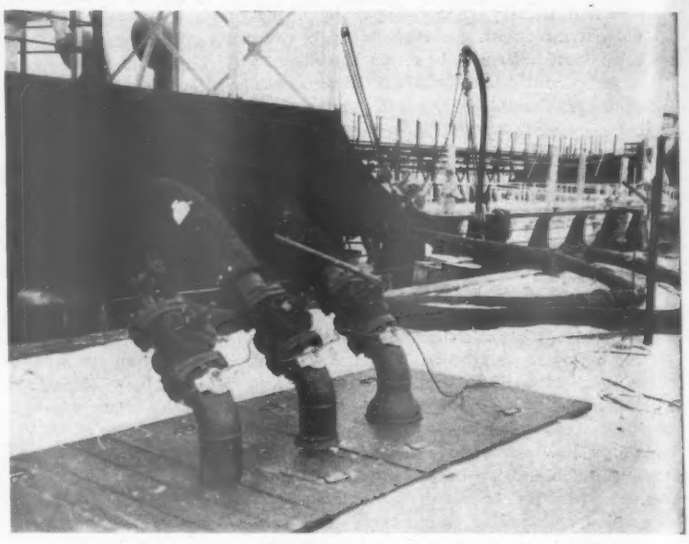
"The new line will provide this important industrial area—which annually consumes almost 2 billion gallons of gasoline—with a new route of access to this vital fuel, as well as kerosene and fuel oil," declared Steve A. Clay, chairman of arrangements committee.

"Under the distribution plan which the new line makes possible, refined petroleum products will be brought by tanker from Gulf Coast refineries to Port St. Joe, Fla., and piped to outlets in Georgia near Bainbridge, Albany, Americus, Macon, Griffin, Atlanta, Rome and Lookout Mountain station, near Chattanooga, Tenn.

"This will replace the former arrangement whereby a large part of the refined products destined for the Southeast were shipped by tanker across the Gulf of Mexico, around the tip of Florida, up along the Atlantic coast to Jacksonville, Savannah and other Atlantic ports, and distributed from there by various means of transportation. The new line will replace 22,000 tons of oil tankers, or 2.2 per cent of those in use in American waters, according to a report of the American Petroleum Institute.

"The short cut, which reduces tanker mileage in some cases by almost two-thirds, and eliminates entirely the necessity of entering the Atlantic Ocean, may prove of untold importance if war comes close to our shores."

The new pipe line will serve many important military establishments of the Southeast. Defense authorities have stressed that the safest, fastest way to get gasoline to the nation's armed forces is through pipe lines. Buried 2½ ft. underground, pipe lines offer a minimum target to an invader. Submarines can't touch them.



Pure Oil tanker "W. W. Mills" discharging 78,000-bbl. cargo at Port St. Joe, Fla., marine terminal of the new Southeastern Pipe Line

Terminals have been erected at nine points on the new line. One of the largest terminals is near Atlanta where seven storage tanks, with a total capacity of 5,000,000 gal., will receive and distribute this gasoline. Eleven pumping stations have been built, at an average distance of 40 miles apart. They will keep gasoline surging steadily through the continuous ribbon of steel pipe. Electric power will be used at all except two of the stations, which will be equipped with diesel engines.

A distinguished audience of federal Government officials, state officials of Florida, Georgia and Tennessee, national petroleum leaders, defense officials, and national and local community, civic and business leaders will witness the dedication ceremonies.

Texas Pipe Line Applies for Two Illinois Pipe-Line Permits

Two applications by Texas Pipe Line Co. for certificates to construct and operate oil pipe lines in the Illinois fields have been set by the Illinois Commerce Commission for hearing at Springfield, Ill., December 17. One of these proposed pipe lines would start at Woodlawn station, Jefferson County, extending southeast to Rural Hill station, Hamilton County, and starting from the company's present line at Sandoval, Marion County, Illinois, and extending west to the Gray pool in Clinton County. The second proposed pipe line would start at the company's

Pipe-Line Personalities . . . . Floyd E. Stanley

FLOYD E. STANLEY, president, Midwestern Engineering & Construction Co., Tulsa, graduated from high school at Kingfisher, Okla., in 1923 and took an 8-month course at a business college. In 1925 he became material clerk and timekeeper when construction work was being carried on at the Empire Ponca City, Okla., refinery. From then until the spring of 1929 he was connected with operations of Cities Service Gas Co. and its subsidiaries and served as resident engineer during building of the Blackwell, Okla., compressor station, inspector of electric welding in the laying of 22 miles of 16-in. near Oilton, Okla., as well as resident engineer and inspector for several larger projects. In 1929 he was chief inspector of No. 1 division consisting of 120 miles during the laying of the Texas-Empire pipe line; in the latter part of that year he was in charge of construction of dock lines near the Cities Service refinery at Chicago, Ill. Early in 1930 he attended Oklahoma A. & M. College for one semester.

For a year starting in the fall of 1930 he was connected with the construction of the Natural Gas Pipeline Co. of America's 24-in., first, and was in charge of engineering and construction of field-gathering lines; later, he was in charge of testing the entire trunk line from the Texas Panhandle to Chicago. Soon after the completion of this project he returned to Oklahoma A. & M. College where he studied industrial engineering until 1933. Next he joined the Natural Gas Pipeline Co. of America organization and was successively district superintendent in charge of operation and maintenance, superintendent of pipe-line and compressor-station departments as well as in charge of personnel and gasoline plant at Fritch, Tex.

In 1937 Mr. Stanley entered the contracting field when he became general superintendent of Sheehan Pipe Line Construction Co. and was in charge of construction and bidding on jobs. With C. C. Bledsoe he organized Midwestern Engineering & Construction Co. in September 1938. This firm has handled the laying of crude-oil gasoline, and natural-gas lines over a large part of the country as well as various other types of construction work.

Johnsonville station in Wayne County, running south to Rural Hill station in Hamilton County, and from the company's Boyleston station in Wayne County to the Hoodville pool in Hamilton County.

Laying of Sinclair Line in Venezuela Starts in January

An office has been established at Williams Brothers Corp. headquarters at Atlanta, Ga., for handling the passports of pipe-line construction men who will be sent to Venezuela for the Sinclair project. The first group with equipment will sail from Brooklyn, N. Y., January 5 in a ship carrying construction equipment. A large part of the pipe has been delivered already. Later groups will leave January 10 and 15. Building of camp facilities and laying operations will start soon after the first group arrives.

The 100-mile 12-in. line will be laid for a subsidiary of Venezuela Petroleum Co., which is controlled by Sinclair interests. This will deliver crude oil from the Santa Barbara field to a terminal near Guanta. It is expected that the line will be completed in about 3 months.

David R. Williams, vice president of Williams Brothers Corp., is in Venezuela looking over the route. Construction will be supervised by A. M. Garber, superintendent. Guy S. Connors, general superintendent, is now in Atlanta, Ga., and will make trips to the project to direct the work while it is in progress.

Standard Oil of New Jersey Prepares for Tinsley Line

Standard Oil Co. of New Jersey interests have four parties in the field surveying for the 175-mile crude-oil line which will be built from the Tinsley field, Mississippi, to Baton Rouge, La. The project is directed by S. W. Day, vice president, Standard Oil Co. of Louisiana. Engineering work is supervised by S. R. Simmons, who was transferred from the Standard of Louisiana organization to Oklahoma Pipe Line Co. in August. Much of the planning for the line is being handled in the Shreveport, La., office of Standard Oil Co. of Louisiana.

Tuscarora Pipe Line Flow Has Not Been Reversed

Contrary to a report which has been published recently in a national business magazine, Tuscarora Oil Co., Ltd., has not reversed the flow of its line across Pennsylvania. The line continues to move refined products westward. During the early part of the fall when unusual methods were being used for transporting crude oil to East Coast refineries, it was reported from Washington that the Office of the Petroleum Coordinator was considering what would be entailed in a change of operation of the Tuscarora system which would mean discontinuing westward shipments of gasoline in order that the line might be used for eastward shipments of crude oil from a terminal point in western Pennsylvania. Standard Oil Co. of New Jersey interests controlling the Tuscarora line do not contemplate making such a change.

Additional Outlet Provided For McLouth Gas Field

W. S. Fees Pipeline Co. has secured right-of-way and is now laying 12 miles of line for transmitting natural gas from wells 3 miles north of McLouth to a point 2 miles west of Dunavent, Kans., where it will connect with a line which has already been installed.

Ashland Puts Four Barges in Service

Four tank barges are to be put into service by the Ashland Oil & Refining Co. for operation of its own towing service between Ashland, Ky., and its storage yards at Floreffe, Monongahela River, it is announced.

The company's towboat, Jim Martin, will take care of this traffic.

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The Oil and Gas Journal
Tulsa, Oklahoma

AN IMPORTANT STATEMENT
from the MISSION MANUFACTURING COMPANY

To assist defense efforts by conserving steel, we urge users of Mission Pistons to send worn piston bodies to our factory for rebuilding, regardless of the amount of wear.

In most cases, the cost of rebuilding will be less than the cost of a new body. In those instances where the repair cost is greater, a new piston body will be furnished. We guarantee that factory rebuilt Mission Piston Bodies are equal to new in both strength and serviceability.

This statement suggesting piston body rebuilding is made for the purpose of cooperating with the national steel conservation program. We can furnish new piston bodies, but we feel that you will be pleased to have us point out another way to save steel.

We would appreciate word of this service being transmitted to field superintendents, tool pushers, and other interested field men. After all, it will take team work on the part of everyone to win this war.

- Send in your worn piston bodies for Mission factory rebuilding. The guaranteed, rebuilt bodies will be returned, transportation paid one way.

- Do not throw away worn Mission Piston Rubbers. They are made from high grade rubber, and will probably be needed, and reclaimed for national defense purposes.

MISSION MANUFACTURING COMPANY
Signed: WALTER B. SHARP, President

Houston, Texas, December, 1941

FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

With 2½ weeks yet to go, completions during 1941 are within 27 of the total for the full year of 1940. Last week completions were off 22 from the preceding week, but still remained well above the 600 level. Oil wells were down 19, gas wells down 6 and dry holes up 3.

With the war only a week old, it was not likely that its effect on activity would be very noticeable. There were signs, however, that it might have a definite effect on drilling in some areas. In California, it was believed likely that declining exports would greatly reduce demand but an unexpected result of air-raid warnings was a drop in domestic use. Many people prefer not to drive when there is a risk of having to stop for indefinite periods during periods of alarm. Rocky Mountain operators were quick to point out that with so large a proportion of the country's output coming from wells near the coasts, fields in the interior should be developed. Preventing the development of many fields is the sliding royalty scale on federal lands and attempts are now being made to change this condition.

A survey conducted by two members of the Pennsylvania Topographic and Geologic Survey of the oil reserves of that state is also timely because of the importance of this production for lubricating oil. This survey, which is presented on the following pages indicates that estimates of recoverable oil formerly presented are approximately 35 per cent too low. The emphasis which is placed on the Middle district from Kane to Butler, rather than on the Bradford side, is also of interest. Recovery of the reserve is, of course, entirely dependent on the successful use of secondary recovery methods, which in turn, necessitate high prices for the crude. If the survey's conclusions are correct and development gets under way in this section the names of Tidioute, Titusville, and Oil City will return to the news after a lapse of many years.

Development and production costs for even the most favorably placed fields are approximately $2.25 or 50 cents below the current price. This margin allows very little insurance against the risks involved and affects only about 25 per cent of the recoverable reserves.

The Wilcox trend play along the Gulf Coast appears likely to fill in the blank space that has existed between the coastal district and the Mid-Continent. This subdivision of the area west of the Mississippi is as old as the oil industry and was responsible for the establishment of headquarters in coastal cities to handle the special problems arising in this area. First in Louisiana and now in Houston County, Texas, Wilcox fields have spread from one district into the other. This middle ground between the two major producing districts has received less than its share of attention, a state of affairs which seems likely to change rapidly. In the same way, the boundary between the Rocky Mountain area and the Mid-Continent is also disappearing with increasing development in western Kansas.

These outpost plays, together with those getting under way in the Anadarko Basin, the northern sector of the San Joaquin Valley and northern West Texas offer the best possibilities for major discoveries.

ILLINOIS: A new McClosky pool started with one of the best producers in the state for some months. The new field is between Flora and Clay City (p. 56).

INDIANA: The sixth pool opener in the revived play in the eastern part of the basin has been brought in in Pike County (p. 63).

ALBERTA: Turner Valley is continually being extended to the north and the latest outpost is also the biggest well in the field (p. 81).

LOUISIANA GULF COAST: A test in the Lewisberg area, Acadia Parish, is testing the lowest of three sands showing gas-distillate. A dry hole 500 ft. from the discovery limits Vinton deep flank production. The discovery is now showing water (p. 62).

CALIFORNIA: As drilling continues in Raisin City, operations are disclosing a series of lenses and correlations within the field are difficult. The Riverdale test which last week appeared to be a discovery showed only water in the Eocene. It was drilled into the Cretaceous and is now being plugged back to test higher formations. An old pumper in the Casmalia field, shut down since 1925, was returned to production and is flowing. As drilling at Inglewood declines, Wilmington is becoming more active (p. 59).

TEXAS GULF COAST: What may prove to be a major discovery is a Frio sand well in the Stowell area, Jefferson County. The saturated section is reported to be 60 ft. thick. An upper Carrizo-Wilcox well in Houston County is expected to extend the Wilcox trend play to the north (p. 78).

MICHIGAN: A small producer opened a new pool in Tuscola County. A Clinton County test is showing oil and if completed as a producer will give that county its first oil (p. 72).

SOUTHWEST TEXAS: Showings are reported in a Wilcox test near Kenedy, Karnes County, and in the Frio on Live Oak Peninsula, Aransas County (p. 69).

WEST CENTRAL TEXAS: Production is reported from a sand in a test east of Haskell (p. 65).

KANSAS: Outstanding was Barber County's big Kansas City-Lansing well which was estimated at 125 bbl. an hour. Two wells to the northeast of Peace Creek in Reno County are extending to Viola lime trend play. Lindsborg and Kraft-Prusa have received major extensions (p. 61).

OKLAHOMA: The seventh producer at Apache has been completed and two wildcats in the district are under way (p. 67).

WEST TEXAS: Shows were found in a test about midway between Harper and Goldsmith. Following a decline in production, Pecos County's new Ellenburger discovery is being deepened. The prospective pool opener southwest of Wasson is still testing (p. 68).

NORTH TEXAS: A Caddo lime pool is in prospect between Ringgold and Henrietta, Montague County. A shallow test in Throckmorton County and a Denton County wildcat also report showings (p. 65).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended December 13, 1941)

	Oil	Gas	Dry	Total	1941 total comp. to date	1940 total comp. to date
N. Y., Pa., and W. Va.	94	16	3	113	5,703	5,285
Ohio	6	17	5	28	1,636	1,458
Indiana	9	2	3	14	494	440
Kentucky	7	2	6	15	635	569
Illinois	47	0	16	63	3,509	3,648
Michigan	16	4	13	33	899	1,083
Kansas	24	1	9	34	2,037	1,765
Nebraska	2	0	2	4	80	41
Missouri, Iowa	0	0	0	0	37	36
Oklahoma	25	1	22	48	1,807	1,760
Texas:						
North Central Texas	45	1	20	66	2,631	2,642
West Texas	34	1	10	45	2,200	1,787
Texas Panhandle	22	1	3	26	680	533
Eastern Texas	10	0	3	13	990	602
Texas Gulf Coast	17	0	2	19	1,033	1,127
Southwest Texas	28	4	4	36	1,779	2,003
Total Texas	156	7	42	205	9,313	8,694
North Louisiana	7	5	3	15	745	645
Louisiana Gulf	15	0	5	20	824	954
Total Louisiana	22	5	8	35	1,569	1,599
Arkansas	1	0	1	2	191	170
Mississippi and Southeast	6	0	0	6	270	191
Montana	4	1	3	8	281	230
Wyoming	1	0	0	1	174	158
Colorado	2	0	1	3	33	18
New Mexico	3	1	2	6	271	580
California	16	2	1	19	1,074	967
Total United States	441	59	137	637	30,013	28,692
Total previous week	460	65	134	659		
Week ended Dec. 7, 1940	332	53	144	529		

Secondary Recovery Governs Future of Pennsylvania Fields

By PARKE A. DICKEY and LAWRENCE S. MATTESON
Pennsylvania Topographic and Geologic Survey, Pleasantville, Pa.*

DURING a period of national emergency it is essential that all enterprises direct their efforts toward the common good, and that certain governmental agencies be entrusted with the coordination of the vital industries exploiting the natural resources of the country. It is important that these coordinators have accurate statistics concerning the industries, and among these the reserves of raw material are fundamental.

It is the functions of the State Geological Survey to accumulate information on the reserves of fuels and minerals in the commonwealth. Pennsylvania's reserves of crude oil are second only to her coal deposits in importance to the nation. Although the Pennsylvania Grade area (western Pennsylvania with adjacent portions of West Virginia, Ohio, and New York) produces only about 2 per cent of the nation's oil, it produces 55 per cent of the high-viscosity-index lubricating oils. It is generally conceded that for many purposes Pennsylvania Grade lubricating oils are superior to those made from any other type of crude oil. They have particularly advantageous qualities when used in aircraft-type engines. The Pennsylvania oil fields, therefore, have a strategic importance far greater than their actual size compared with other oil-producing regions in the nation.

Estimates of the quantity of recoverable reserves are also of great value to those engaged in the industry. It is important for refiners and marketers to know the amount of reserves and the likelihood of increases or decreases in rates of production.

The future of the oil industry in Pennsylvania depends on the wider application of water, air, or gas injection to stimulate oil production. The great majority of oil wells not so stimulated have a very low daily production, and are operated either with very little profit, or at a loss in the hope that the price of oil will advance or that secondary methods may eventually be applied. In districts where secondary-recovery methods are not generally used large numbers of wells are being abandoned as unprofitable to operate.

For this reason it is impossible to estimate the oil reserves of Pennsylvania by extending curves showing the past rate of production. The majority of the unstimulated wells are at or near their economic limit. Oil production from these wells may be expected to drop at a faster rate than it has in the past as they are progressively abandoned. On the other hand, if secondary recovery methods are more widely applied, it is likely that the state will continue to produce oil at its present rate for many years, or even increase the rate of production. Estimates of oil reserves would, therefore, be of little value unless they were based on secondary recovery methods.

Basis for Reserve Estimates

Reserve estimates made by the American Petroleum Institute include only reserves in known and proved fields, recoverable by present methods. They do not include any estimates of recovery from probable future discoveries, from probable advances in production technique, or from extensions and revisions in fields not yet fully developed. In estimating the reserves of oil in Pennsylvania an effort has been made to follow these conservative methods. Unfortunately, sufficient data are not available for some fields to estimate accurately either the total oil in place or the amount recoverable at current prices. For these fields it was necessary to make estimates based on recoveries in other fields with similar geological characteristics.

The fact that oil recovery by air and gas drive in the Titusville-Oil City district has been notably successful does not necessarily indicate that similar recoveries are obtainable in other fields where intensive air and gas drives have not been applied. It would be very erroneous, for example, to have assumed that the oil recovery per acre obtained at Bradford by water flooding could be applied to the other fields in the state where water flooding has not proved effective in stimulating oil production.

Air- and gas-drive methods have resulted, however, in increased oil production in almost all the principal fields of the state. In some fields experiments to date have been financially unsuccessful. In a few of these cases it is clear that the conditions in the sand were unfavorable, but the majority of the failures may undoubtedly be ascribed to poor engineering technique or inadequate equipment.

In estimating the recoverable oil in fields where air and gas drives are not generally used, it seems desirable to assume recoveries similar to those obtained in fields where they are successful, provided the oil sands are geologically similar. In order that the estimates should be conservative, it will be assumed that only a small portion of the theoretically recoverable oil can be economically recovered.

Hitherto, estimates of the oil in Pennsylvania recoverable by secondary methods have been available only for the Bradford field, where water flooding has proved successful. During the past 5 years detailed geological and engineering studies have been made in the Kane to Butler or Middle district, where the injection of air and gas has been successful. Although this work is not yet complete, it is possible to make preliminary estimates of recoverable oil in that district. Little recent geological work has been done in the Southwestern district, and estimates of recoverable oil in that district are less reliable.

The producing oil fields of Pennsylvania are generally grouped into three districts Bradford, Kane to Butler, and Southwestern Pennsylvania, and these will be discussed separately.

Reserves in Bradford

Bradford.—A complete discussion of the Bradford field was published by the Geological Survey in 1938.[1] A weighted average recovery per acre-foot of oil-producing sand by present flooding methods was calculated for each of the different parts into which the Bradford pool can be divided. These averages were used in estimating the total oil that can be recovered by water flooding as now practised. These data are shown in Table 1. It was estimated that the field originally contained 1,249,970,000 bbl. of oil, of which 203,600,000 bbl. were produced by natural methods before water flooding. An estimated 304,647,000 bbl. were recoverable by water flooding, of which 110,250,000 bbl. were produced by January 1, 1937. From January 1, 1937 to January 1, 1942, it is estimated that 76,000,000 bbl. were produced, so that the oil remaining which can be recovered by water flooding amounts to 118,397,000 bbl.

It is possible that at prices of oil current in 1941 it will not be profitable to operate any territory containing less than 2,500 bbl. of recoverable oil per acre. In this case 51,045,000 bbl. will be subtracted from the total recoverable oil, leaving 67,352,000 bbl. as economically recoverable from the Bradford pool. Oil reserves in the Bradford field are given in Table 1.

Central District

Kane to Butler district.—The Kane to Butler district includes those oil pools south of the Bradford pool as far as the southern boundary of Butler County.

Estimates of the recoverable oil were made as follows: The producing oil pools were outlined on the U. S. Geological Survey topographic quadrangle maps on the scale of 1:62,500, and were divided into small areas of different sand thickness, depth, and oil content. The oil content was estimated, if possible, from core analyses taken in the pool, or if none were available from that pool, estimates were made by assigning a value which seemed reasonable from cores in similar pools and the productivity of the leases in the pool in question. Most of the larger pools were thus divided into many small areas, to each of which was assigned an oil content of so many barrels per acre, based on the thickness of the sand, and, if possible, core analyses.

Each of these small areas was then measured by planimeter and its area expressed as acres. The area multiplied by the assigned oil content in barrels per acre gave the total oil content.

Estimates of the amount of recoverable oil are based on the results of secondary recovery methods in the leases in the district.

For the Guffey, Kanesholm, and Clarendon pools where water flooding is practiced, the estimates are based on the amount of oil recovered in those pools and in the Bradford pool. In each case the total theoretically recoverable oil is given. The oil which it is actually possible to recover by present methods will be about half of this, and this amount will vary with the price per barrel received for the oil. A higher price makes it profitable to work poorer territory.

The other pools in the Kane to Butler district have not responded to water flooding, but produce successfully by air or gas-drive methods. Both field and laboratory studies[2] indicate that it is impossible to reduce the oil saturation of a sand to much below 15 per cent of the pore space. In the Venango type of sands it seems probable that 150 bbl. of oil per acre-foot will remain in the sand no matter how intensively it is subjected to gas or air drive. The oil in ex-

TABLE 1—OIL RESERVES IN BRADFORD OIL FIELD

Part of pool—	Acres	Average thickness (feet)	Average porosity (per cent)	Average saturation (per cent)	Estimated total oil content* (barrels)	Estimated average recovery per acre-foot by water flooding (barrels)	Estimated average recovery per acre by water flooding (barrels)	Estimated recovery by water flooding
Northeast area	22,500	30	14.4	44	331,790,000	185	5,550	124,875,000
Northwest lobe	13,500	29	14.3	44	191,100,000	145	4,200	56,767,000
Southeast lobe	14,000	26	15.4	44	191,350,000	150	3,900	54,600,000
Knapp dome	7,000	31	13.7	33	76,110,000	80	2,480	17,360,000
Rixford dome	1,500	28	13.7	33	14,730,000	80	2,240	3,360,000
Marginal areas	25,500	22	13.2	42	241,290,000	85	1,870	47,685,000
	84,000				1,046,370,000			304,647,000
Estimated natural production of Bradford pool					203,600,000	Produced by water flooding before Jan. 1, 1937		110,250,000
Total oil originally present in Bradford pool					1,249,970,000	Produced by water flooding from Jan. 1, 1937, to Jan. 1, 1942		76,000,000
						Remaining oil recoverable by water flooding, Jan 1, 1942		118,397,000

*After natural production had ceased but before water flooding started.

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cess of 150 bbl. per acre-foot has been called physically recoverable oil. A variable percentage of this may actually be recovered, depending on the intensity of the operation. In actual practice, certain projects have recovered as much as 60 per cent of the physically recoverable oil.

Estimates of the number of acres, the total oil, and the physically recoverable oil in the Kane to Butler district are given by quadrangles in Table 2.

It is clear that it would be impossible to recover all the oil in excess of 150 bbl. per acre-foot at a profit by present methods, even if the price received for oil were substantially higher than it was during the period 1930-40 ($2.25 per barrel). Any estimate of the quantity actually recoverable at different price levels will have to be based on certain arbitrary assumptions concerning costs of production. The following method of dividing the oil reserves, based on physically recoverable oil content and depth to the producing horizon, cannot be regarded as entirely satisfactory. It results, however, in an approximate classification of the producing acreage on a better economic basis than a simple statement of total oil or total recoverable oil.

TABLE 2—PRODUCTIVE ACREAGE, TOTAL OIL, AND PHYSICALLY RECOVERABLE OIL IN THE KANE TO BUTLER DISTRICT OF PENNSYLVANIA

(In thousands of barrels)

Quadrangle—	Acres	Total oil	Physically recoverable
Warren*	27,523	126,772	42,257
Kinzua*	2,525	20,780	7,850
Titusville	42,830	356,596	139,608
Tidioute	10,028	53,597	20,177
Sheffield*	18,304	113,035	38,901
Kane*	18,252	112,171	34,408
Mount Jewett*	9,500	65,100	23,050
Franklin	25,420	163,080	64,180
Oil City*	48,775	242,883	98,470
Tionesta*	690	4,760	1,785
Hilliards	27,910	138,592	63,382
Foxburg*	50,725	306,397	123,766
Clarion*	3,064	17,012	7,192
New Kensington* (†)	4,856	29,628	12,303
Butler*	24,453	149,391	55,659
Sewickley* (†)	3,696	26,842	10,750
Zelienople*	10,520	45,340	18,524
Kittanning*	8,273	64,237	25,302
New Castle*	5,428	25,744	10,298
Other outlying areas*	5,000	12,500	5,000
Total	347,772	2,074,457	802,862

*Subject to revision as detailed studies are completed. †Portion of quadrangle in Butler County only.

TABLE 3—CLASSIFICATION OF OIL-PRODUCING ACREAGE AND RESERVES IN KANE TO BUTLER DISTRICT

Class—	A	B	C	D	E	F	Total
Cost per barrel	$2.25	$2.75	$3.25	$3.75	$4.25	over $4.25	
Acres	34,340	101,240	79,940	39,980	40,770	51,500	347,770
Total oil*	354,132	650,525	473,506	214,216	158,675	223,403	2,074,457
Physically recoverable*	139,324	254,656	197,827	80,482	59,246	71,327	802,862
Recoverable at cost shown*	55,700	95,400	64,300	22,100	13,300	12,500	263,300
Cumulative per cent	21.2	57.4	81.9	90.3	95.3	100.0	.....

*Thousands of barrels.

Analysis of Development Costs

To compute the development cost per barrel, a fixed cost for surface equipment, plus a cost per foot for drilling, casing, shooting, and tubing was used, and these costs were divided by the quantity of oil produced during the life of the project. Each well requires approximately $500 worth of surface equipment and costs about $1.66 per foot to drill, case, shoot, etc. The present spacing of old wells is about one well to every 3 acres, and it is probable that in the installation of air-gas-drive methods, as many new wells will be drilled as there are old ones. There will, therefore, be one new well to every 3 acres, and the final spacing will be one well to every 1½ acres. At this spacing 40 per cent of the oil in place in excess of 150 bbl. per acre-foot should be recoverable. The development cost per barrel will thus be

$$\frac{500 + 1.66D}{1.2\,(C-150)T}$$

where D = depth in feet, C = total oil content of sand in barrels per acre-foot, and T = thickness of sand in feet.

The Kane to Butler area was divided into small areas of similar depth and oil content. These were plotted as points on the accompanying chart (Fig. 1) and each point represents a total number of acres of the same depth and oil content. Lines were drawn dividing the total acreage into six classes on the basis of development costs as defined above. The acreage in Class A will have a development cost of less than $0.50 per barrel; Class B, $0.50 to $0.75; Class C, $0.75 to $1; Class D, $1 to $1.25; Class E, $1.25 to $1.50, and Class F, over $1.50.

To the development cost must be added the other costs of producing the oil, including operating, overhead, and depletion of oil reserves. The other costs per barrel will vary with the class of acreage because it will cost more to operate deeper properties and the cost per barrel will be less on richer properties. For this discussion, values of the other costs have not been calculated theoretically, but reasonable values have been assigned on the basis of cost data submitted in September 1941 to a committee of the Pennsylvania Grade Crude Oil Association. Only those properties employing secondary recovery methods were considered. The values of other costs in the different classes were assigned as follows: Class A, less than $1.75 per barrel; Class B, $1.75 to $2; Class C, $2 to $2.25; Class D, $2.25 to $2.50; Class E, $2.50 to $2.75; Class F, over $2.75 per barrel. These costs do not include interest on invested capital.

It is possible that more financial failures of repressuring projects will occur in the poorer classes of acreage, and that considerably less than 40 per cent of the physically recoverable oil will be recovered. From Class A acreage it is believed that 40 per cent or more may be recovered; Class B, 35 to 40 per cent; Class C, 30 to 35 per cent; Class D, 25 to 30 per cent; Class E, 20 to 25 per cent; and Class F, 17.5 per cent.

The quantity of oil in the Kane to Butler district recoverable at various price levels is given in Table 3. The quantity recoverable at a cost less than $3.25 per barrel is calculated to be 215,400,000 bbl. If important improvements in recovery technique are developed, a substantially greater quantity may be recovered.

Southwestern district.—In spite of the great success in stimulating oil production in the Bradford and

(Continued on Page 80)

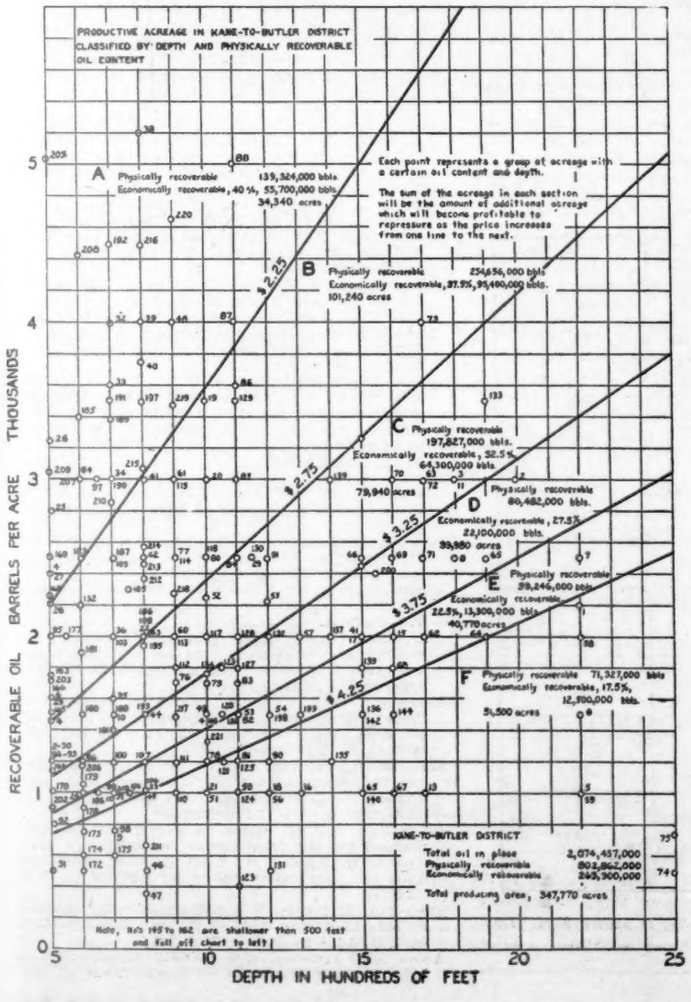
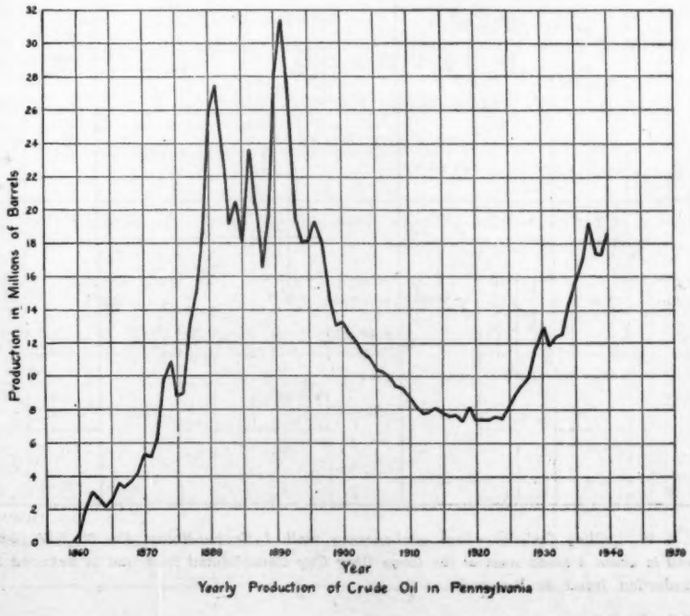

PRODUCTIVE ACREAGE IN KANE-TO-BUTLER DISTRICT CLASSIFIED BY DEPTH AND PHYSICALLY RECOVERABLE OIL CONTENT
Each point represents a group of acreage with a certain oil content and depth.
The sum of the acreage in each section will be the amount of additional acreage which will become profitable to repressure as the price increases from one line to the next.
A Physically recoverable 139,324,000 bbls. Economically recoverable, 40 %, 55,700,000 bbls. 34,340 acres
B Physically recoverable 254,656,000 bbls. Economically recoverable, 37.9%, 95,400,000 bbls. 101,240 acres
C Physically recoverable 197,827,000 bbls. Economically recoverable, 32.5% 64,300,000 bbls. 79,940 acres
D Physically recoverable 80,482,000 bbls. Economically recoverable, 27.5% 22,100,000 bbls. 39,980 acres
E Physically recoverable 59,246,000 bbls. Economically recoverable, 22.5%, 13,300,000 bbls. 40,770 acres
F Physically recoverable 71,327,000 bbls Economically recoverable, 17.5%, 12,500,000 bbls. 51,500 acres
$2.25
$2.75
$3.25
$3.75
$4.25
KANE-TO-BUTLER DISTRICT
Total oil in place 2,074,457,000
Physically recoverable 802,862,000
Economically recoverable 263,300,000
Total producing area, 347,770 acres
Note, No's 145 to 162 are shallower than 500 feet and fall off chart to left
RECOVERABLE OIL BARRELS PER ACRE THOUSANDS
DEPTH IN HUNDREDS OF FEET

Fig. 1 (left) — Productive acreage in Kane to Butler district classified by depth and physically recoverable oil content

Fig. 2 (below)—The effect of secondary recovery on Pennsylvania's production is shown by the increase recorded since 1925



Discovery West of Clay City Pool Establishes New Trend

By STAFF CORRESPONDENT

MATTOON, Ill., Dec. 15.—Outstanding completion in Illinois during the past week was a rank wildcat southeast of Flora in Clay County, which opened a new pool and featured all activity in the basin fields. The test was L. & W. Drilling Co. 1 Cooper-Nolan, S½ SE NW 10-2n-7e, which came in over the week end and made an actual natural initial flow of 3,608 bbl., producing 9,500 bbl. in its first 3 days of production. The test, located about 6 miles southeast of Flora and nearly 3 miles west of the Clay City Consolidated field, had 10 ft. of McClosky pay. Pure Oil Co., holding most of the acreage in the surrounding area, has already made six locations nearby, five of which are already drilling, while L. & W. is drilling 2 Cooper-Nolan as a north offset. The successful completion of 1 Cooper-Nolan is believed to have established a definite production trend in the area.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Dale	2	811	6,076
Griffin	2	225	4,718
Johnsonville	5	1,167	16,260
Louden	3	554	9,273
New Harmony	6	781	16,618
Parkersburg	3	2,635	9,362
Rural Hill	5	3,021	16,522
Woodlawn	5	541	9,934
Other pools	14	1,004	36,268
Wildcats	2	3,725	5,405
Dry holes: Fields	*9	.....	24,045
Wildcats	7	.....	15,468
Total	63	.....	169,949

* Clay City 3, Fairman 1, Johnsonville 1, Louden 1, Mill Shoals 1, Russellville 1, Sailor Springs 1.

Roland Outpost Has Benoist Show

The unusual success of the Cameron Bros. Oil Co. in the Illinois basin continued without interruption last week as a good showing of Benoist oil was found at a semiwildcat north of the Roland field, Cameron 1 DeBoard, SE NE NE 2-7s-8e. On a 30-minute drillstem test of the Benoist sand at 2,830-75 ft., 200 ft. of oil and 100 ft. of oily mud were recovered. However, the well will be drilled ahead to the Aux Vases, another of the productive formations at Roland, before the operators decide where to set casing. No. 1 DeBoard is about ¾ mile north of production.

Completion of 1 DeBoard as a producer will be the thirty-third consecutive successful venture undertaken by the Cameron brothers in Illinois. Their only dry hole in the state was the first well they drilled. They also have another White County wildcat drilling, 1 Reilling, SW SE SE 21-6s-10e, 3 miles east of the Storms field and about 4½ miles west of the Rising Sun pool.

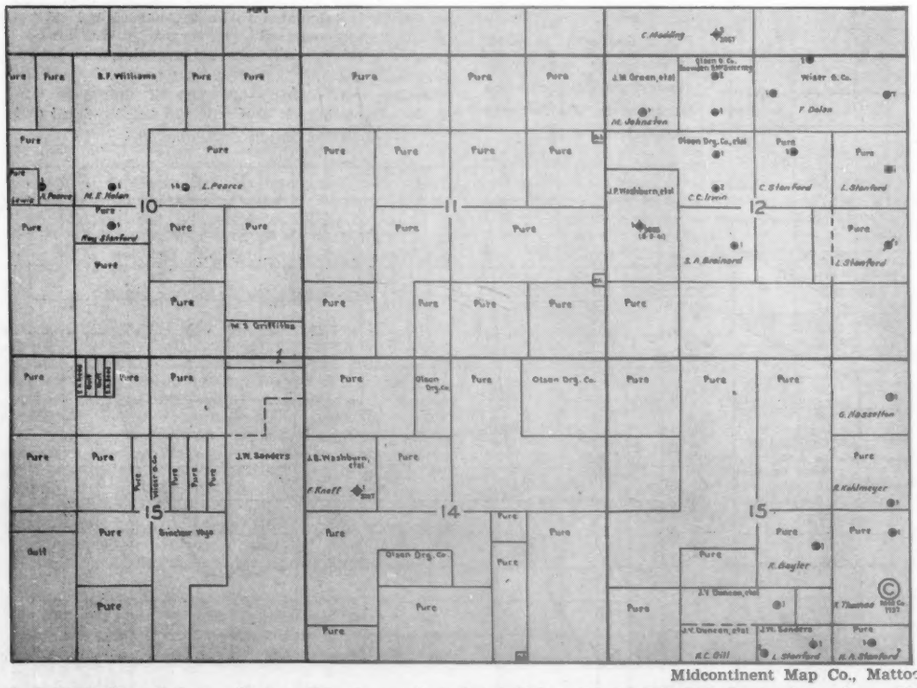
Wayne County Wildcat Flows by Heads

The west offset to a disappointing Wayne County test, ¾ mile south of the Johnsonville pool, is flowing by heads, indicating commercial production in the Levias and McClosky. The test is Texas 2 B. C. Talbert, S½ SW SE 17-1s-6e, bottomed at 3,107 ft. with casing set at 3,097 ft. The well began flowing after plug was drilled. It is one location west of Kingwood company 1 O'Neil, S½ SE SE 17-1s-6e, which was tested unsuccessfully in the same formations and then plugged back to the Aux Vases where casing will be ripped to test that formation.

Activity Increasing Rapidly at Centerville

The new East Centerville pool in Burnt Prairie Township, about 9 miles southwest of Grayville, still is the hottest spot in the White County oil area. With about a dozen operations in the field now, interest was increased last week by a report that W. C. McBride 1 Daly, N½ SW SW 7-4s-10e, ¾ mile southwest of the pool, was flowing at the rate of 400 bbl. a day. About 3 per cent of the production at 1 Daly was water, although the well was pinched in and tools were still in the hole. The test has not yet been acidized.

All activity in the area at present is confined to Section 7, with prospects that it will soon spread to Section 8.



Midcontinent Map Co., Mattoon

L. & W. Drilling Co.'s excellent pool-opening well, 1 Cooper-Nolan, S½ SE NW 10-2n-7e, is shown here. This well is about 3 miles west of the large Clay City Consolidated field and is believed to have established a new production trend in the area

ILLINOIS COMPLETIONS

Wildcats

Adams County: R. Hussong 1 fee, SW NE SW NW 21-1s-6w, dry at 600 ft.

Clay County: B. F. Williams 1 M. E. Nolan, S½ SE NW 10-2n-7e, flowed 3,608 bbl., natural, McClosky 3,064-66 ft., T.D. 3,082 ft., *pool opener.*

Scott 1 Rogers, NE NW NW 36-4n-7e, pumped 117 bbl. oil and 3 bbl. water, 20-qt. shot 2,321½-22½ ft., Tar Springs sand 2,313 ft., T.D. 2,322½ ft., *Sailor Springs extension.*

Coles County: Olen Humphries 1 fee, NE NE SW NE 13-13n-10e, dry at 945 ft., show gas 253 ft., show oil and gas 315-22 ft., Mississippian 315 ft.

Edgar County: Raymond Pogue 1 J. P. Honnold, NW SW NE 14-12n-14w, location abandoned.

Fayette County: L. B. Hoss 1 Knecht, NE SE NE 36-5n-1e, dry at 2,060 ft., Tar Springs 1,425 ft., Glen Dean 1,498 ft., Cypress 1,648 ft., Weiler 1,659 ft., Benoist 1,797 ft., Renault 1,861 ft., Aux Vases 1,865 ft., Ste. Genevieve 1,949 ft., Fredonia 1,992 ft.

Hamilton County: Sun 1 Gideon Moss, W½ NW NE 12-6s-5e, dry at 3,419 ft., Menard 2,329 ft., Waltersburg 2,430 ft., Vienna 2,490 ft., Glen Dean 2,579 ft., Hardinsburg 2,647 ft., Golconda 2,739 ft., Barlow 2,919 ft., Cypress sand 2,963 ft., Paint Creek 3,009 ft., Benoist 3,033 ft., Renault 3,088 ft., Aux Vases 3,110 ft., Aux Vases sand 3,165 ft., Ste. Genevieve 3,197 ft., Levias 3,240 ft., McClosky 3,285 ft.

Mid-Sun 1 Babler, S½ SW SE 36-4s-5e, dry at 3,541 ft., Kincaid 2,265 ft., Menard 2,525 ft., Glen Dean 2,745 ft., Golconda 2,875 ft., Barlow 3,049 ft., Cypress sand 3,030 ft., Benoist 3,224 ft., Aux Vases 3,322 ft., Ste. Genevieve 3,350 ft., Fredonia 3,412 ft., McClosky 3,457 ft., St. Louis 3,537 ft.

Jackson County: Halverson 1 Truax-Traer, SE NW NE 25-7s-2w, location abandoned.

Jefferson County: C. C. Nye et al 1 Purcell, NW NW SW 22-1s-2e, dry at 1,939 ft., Glen Dean 1,557 ft., Hardinsburg 1,608 ft., Golconda 1,668 ft., Barlow 1,764 ft., Cypress 1,778 ft., Cypress sand 1,784 ft., Paint Creek 1,868 ft., Benoist 1,924 ft.

Wabash County: Hilton Oil 1 R. Skelton, NW NE SW 36-1n-14w, dry at 2,964 ft., Menard 2,047 ft., Glen Dean 2,287 ft., Golconda 2,399 ft., Barlow 2,497 ft., Renault 2,733 ft., Aux Vases 2,807 ft., Ste. Genevieve 2,842 ft.

Fields

Benton, Franklin County: Shell 5-B T. M. McKemie, SW SW NW 30-6s-3e, pumped 103 bbl., 15-qt. shot 2,134-49 ft., Tar Springs 2,120-49 ft., T.D. 2,149 ft.

Clay City, Wayne County: Pure 1-A C. Orr, W½ NE SW 12-1n-7e, dry, at 3,087 ft., Glen Dean 2,497 ft., Hardinsburg 2,515 ft., Barlow 2,663 ft., Aux Vases 2,948 ft., Genevieve 3,005 ft., Rosiclare 3,012 ft., Fredonia 3,045 ft.

Pure 1 Brummet Consol., E½ NW SE 28-2n-8e, dry at 3,090 ft., Glen Dean 2,437 ft., Hardinsburg 2,488 ft., Barlow 2,622 ft., Cypress sand 2,647 ft., Aux Vases 2,920 ft., Ste. Genevieve 2,962 ft., Rosiclare 2,983 ft., Fredonia 3,005 ft., McClosky 3,013 ft.

Pure 2 L. McConnell, S½ SE NE 31-2n-8e, dry at 3,080 ft., Glen Dean 2,643 ft., Hardinsburg 2,490 ft., Barlow 2,637 ft., Cypress 2,648 ft., Aux Vases 2,910 ft., Ste. Genevieve 2,957 ft., Rosiclare 2,973 ft., Fredonia 3,009 ft.

Dale, Hamilton County: Pure 22 E. Duppy, NW SW SW 6-6s-7e, pumped 69 bbl., 290-qt. shot 2,970-3,001 ft., Aux Vases 2,964-66 ft., 2,995-97 ft., T.D. 3,001 ft.

Texas 11 R. R. Johnson, NW NW NW 18-6s-7e, flowed 742 bbl., 30-qt. shot 3,060-75 ft., Aux Vases 3,040-48 ft., 3,051-58 ft., T.D. 3,075 ft.

Dundas, Jasper County: Pure 2 W. R. Cunningham, W½ NE SE 19-5n-10e, pumped 22 bbl., 5,000 gal. acid, McClosky 2,816-22 ft., 2,833-35 ft., T.D. 2,860 ft.

J. Carroll et al 1 B. Mattingly, SW SW SW 4-5n-10e, pumped 16 bbl., 3,000 gal. acid, 2,756-60 ft., 2,772-75 ft., T.D. 2,845 ft.

Fairman, Marion County: A. J. Hausmann 1 E. M. DuComb, SW SW SW 7-3n-1e, dry at 1,465 ft., Cypress 1,306 ft., Benoist 1,459 ft., slight show oil 1,458-65 ft.

Griffin, Wabash County: W. W. Gray 21-A fee, NW NE SW 14-3s-14w, pumped 100 bbl., natural, Cypress sand 2,515-39 ft., T.D. 2,539 ft.

Longhorn 25 Helm, NW SW NW 23-3s-14w, pumped 125 bbl., natural, Tar Springs sand 2,171-79 ft., T.D. 2,179 ft.

Irons, White County: J. R. Thompson 1 Bryant, NE NW NE 26-6s-8e, pumped 1 bbl. oil and 6 bbl. water, 5-qt. shot 2,326-28 ft., Tar Springs 2,328 ft., T.D. 3,035 ft., P.B. 2,346 ft.

Johnsonville, Wayne County: Ohio Fuel Supply 2 V. Clark, N½ NE NW 28-1n-6e, pumped 276 bbl., 4,000 gal. acid, perf. 3,144-50 ft., 3,198-3,212 ft., McClosky 3,202-11 ft., T.D. 3,240 ft.

Ruwaldt 1 A. Knapp, S½ NE SE 35-1n-6e, pumped 490 bbl., perf. 3,205-09 ft., 2,000 gal. acid, perf. 3,187-94 ft., 4,000 gal. acid, McClosky 3,185-89 ft., 3,199-3,203 ft., T.D. 3,210 ft.

Olson Drlg. 1-B H. States, W½ NW SW 36-1n-6e, pumped 164 bbl. from Levias and McClosky, perf. 3,064-67 ft., 3,140-46 ft., 5,000 gal. acid, reacidized 8,000 gal., McClosky 3,185-90 ft., 3,205-07 ft., T.D. 3,289 ft.

Shell 2 A. E. Porter, W½ SW SE 36-1n-6e, pumped 67 bbl., 15-qt. shot 3,075-87 ft., Aux Vases 3,066-96 ft., T.D. 3,268 ft., P.B. 3,125 ft.

Aetna Oil 2 Jameson, W½ SW SW 31-1n-7e, dry at 3,325 ft., Glen Dean 2,621 ft., Barlow 2,828 ft., Aux

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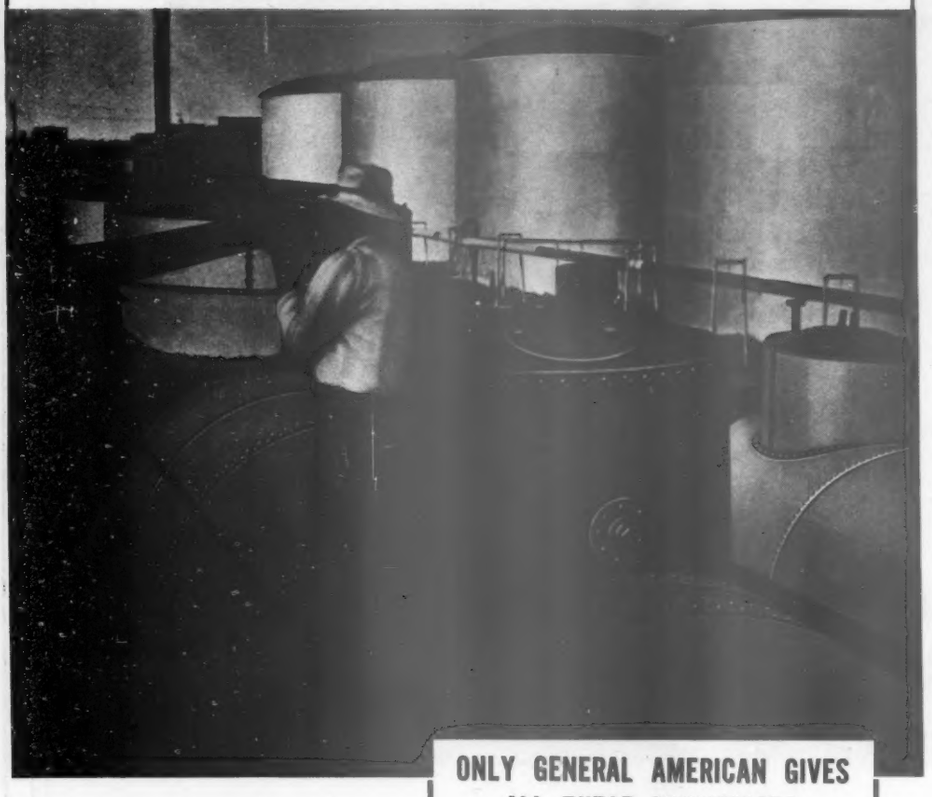

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Vases 3,105 ft., Ste. Genevieve 3,150 ft., McClosky 3,217 ft.

Olson Drlg. 1 Roy Watson, N½ SE NW 1-1s-6e, pumped 170 bbl. oil and 17 bbl. water, McClosky 3,206-09 ft., T.D. 3,255 ft.

Louden, Fayette County: Carter 2 Doty, SE NE SE 1-8n-3e, pumped 54 bbl., 20-qt. shot 1,517-23 ft., Weller 1,515 ft., T.D. 1,523 ft.

Carter 6-D Bauer, SE SE 21-8n-3e, flowed 250 bbl. through ¾-in. choke, 100 gal. acid, reacidized 100 gal. Devonian 2,938 ft., pay 3,022 ft., Trenton 2,824 ft. (dry), St. Peter 4,421 ft. (dry), T.D. 4,680 ft., P.B. and cleaned out to 3,024 ft.

Carter 10-D L. M. Dial, NE NW 33-8n-3e, flowed 250 bbl., natural, Devonian 2,984 ft., pay 3,067 ft., T.D. 3,070 ft.

Oils, Inc. 4-D E. Wood, E½ NE SE 16-8n-3e, dry at 3,199 ft., Glen Dean 1,337 ft., Barlow 1,469 ft., Ste. Genevieve 1,710 ft., Salem 2,146 ft., Louisiana 2,970 ft., Devonian 2,088 ft.

Mason, Effingham County: Jones & Martin 2 Leith, S½ NW SE NW 27-6n-5e, pumped 75 bbl., perf. 2,318-25 ft., Benoist 2,318-30 ft., T.D. 2,330 ft.

Mill Shoals, White County: Cherry & Kidd et al 2 Herman, NW NE SE 30-3s-8e, dry at 3,365 ft., Aux Vases 3,191 ft., Ste. Genevieve 3,256 ft., Rosiclare 3,286 ft., Fredonia 3,334 ft., McClosky 3,337 ft.

Texas 16 Poorman, SE NE NW 30-3s-8e, pumped 20 bbl. oil and 24 bbl. water, 30-qt. shot 3,213-28 ft., Aux Vases sand 2,196 ft., T. D. 3,236 ft.

Mt. Carmel, Wabash County: Dean & Martin 3 Sanford, S½ SE SE NW, 21-1s-12w, pumped 5 bbl. oil and 100 bbl. water, perf. 2,290-98 ft., 1,000 gal. acid, Rosiclare 2,313-19 ft., T.D. 2,330 ft.

Noble, Richland County: Pure 4 H. F. Frost, E½ NW SW 9-3n-9e, pumped 156 bbl. oil and 23 bbl. water, natural, Cypress sand, T.D. 2,601 ft.

New Harmony, White County: Superior 7 H. C. Ford, N½ SE NW SW 23-4s-14w, pumped 100 bbl., 80 per cent water, perf. 2,234-48 ft., 2,582-98 ft., 2,640-62 ft., Tar Springs 2,234 ft., Cypress 2,583 ft., Cypress sand 2,640 ft., T.D. 2,862 ft.

Tide Water 9 Evans, S½ SE NW 4-4s-14w, pumped 333 bbl., Aux Vases 2,786-99 ft., T.D. 2,815 ft.

Superior 16-D H. C. Ford et al, SE SE NW 34-4s-14w, pumped 65 bbl., 190-qt. shot 2,582-97 ft., Cypress sand 2,576 ft., T.D. 2,597 ft.

Tide Water 6 Bacon, SE NE SE 5-5s-14w, pumped 115 bbl. in 6 hr., pumped off, 20-qt. shot 2,742-50 ft., Benoist 2,734-50 ft., T.D. 2,873 ft., P.B. 2,750 ft.

Tide Water 5 Bacon, SE SE NE 5-5s-14w, pumped 43 bbl., Benoist sand 2,733-45 ft., T.D. 2,745 ft.

North Benton, Franklin County: Smokey Oil 1 Odum, NE SE NE 11-6s-2e, pumped 125 bbl., 5-qt. shot 2,720-25 ft., Aux Vases 2,718 ft., T.D. 2,726 ft.

Parkersburg, Edwards County: Central Pipe Line et al 4 Kent Comm., E½ NE SE 31-2n-14w, flowed 1,685 bbl., 3,000 gal. acid, McClosky 3,094-3,100 ft., T.D. 3,100 ft.

Ohio 2 O. Stremme, W½ NE NE 31-2n-14w, pumped 243 bbl. oil and 81 bbl. water, 2,000 gal. acid, perf. 3,135-38 ft., McClosky 3,134-44 ft., T.D. 3,145 ft.

W. C. Brown et al 1 Stremme, S½ NW NW NW 32-2n-14w, flowed 707 bbl., 5,000 gal. acid, McClosky 3,094-3,101 ft., 3,107-12 ft., T.D. 3,117 ft.

Roland, White County: Carter 2 Von McGill, NE SE NE 15-7s-8e, pumped 51 bbl. from Waltersburg and Aux Vases, perf. 2,180-90 ft., 2,184-86 ft., 2,180-84 ft., 80-qt. shot 2,927-52 ft., Waltersburg sand 2,185 ft., Aux Vases sand 2,928-51 ft., T.D. 2,957 ft.

Rural Hill, Hamilton County: Shell 3 Braden Church Comm., SE NW SW 13-6s-5e, flowed 601 bbl., perf. 3,382-92 ft., 3,372-92 ft., 3,000 gal. acid, perf. 3,240-60 ft., 3,336-46 ft., McClosky 3,339-44 ft., 3,372-96 ft., T.D. 3,412 ft.

Texas 5 M. Lockwood, NE SE SW 13-6s-5e, flowed 492 bbl. in 16 hr. from Aux Vases, Levias and McClosky, perf. 3,154-96 ft., 3,000 gal. acid in Levias, McClosky 3,267-73, 3,277-80 ft., 3,315-25 ft., 5,000 gal. acid, 30-qt. shot 3,115-30 ft., Aux Vases 3,105-37 ft., T.D. 3,370 ft.

Texas 6 T. Lockwood, SE SW SE 13-6s-5e, flowed 581 bbl. in 20 hr. from Aux Vases, Levias and McClosky, perf. 3,183-92 ft., 3,000 gal. acid Aux Vases 3,104-28 ft., Levias 3,184-94 ft., McClosky 3,265-68 ft., T.D. 3,291 ft.

Shell 3 L. L. Lockwood, NE NW NW 13-6s-5e, flowed 147 bbl. from Aux Vases and Levias, perf. 3,204-22 ft., 5,000 gal. acid, 15-qt. shot 3,155-65 ft., Aux Vases 3,126 ft., saturation 3,143-53 ft., Levias 3,205-22 ft., 3,303-12 ft., T.D. 3,315 ft.

Reward & Whisenant 3 S. Lockwood, SW SW SW 14-6s-5e, flowed 1,200 bbl., 100-qt. shot 3,094-3,130 ft., Aux Vases sand 3,095-3,128 ft., T.D. 3,134 ft.

Russellville, Lawrence County: Kentucky Nat. Gas 4 A. Gwinn, E½ NW NE 18-4n-10w, dry at 827 ft., sand 808 ft.

Sailor Springs, Clay County: C. Robinson 1 Busby, SW SE NE 34-4n-7e, dry at 2,607 ft., base Pennsylvanian 2,024 ft., Menard 2,215 ft., Vienna 2,332 ft., Tar Springs 2,342 ft., Glen Dean 2,415 ft., Barlow 2,565 ft., Cypress sand 2,598 ft.

St. Paul, Fayette County: H. Luttrell 1 Aukamp, NW NW NE 31-5n-3e, pumped 150 bbl. oil and 30 bbl. water, 10-qt. shot 1,896-1,905 ft., Benoist 1,895 ft., T.D. 1,906 ft.

Salem, Marion County: Texas 23 K. Wayman, SW NE NE 31-2n-2e, swabbed 42 bbl., natural, Trenton 4,512 ft., old well deepened from 3,380-4,626 ft.

Texas 16 T. Stroup, SE SW SE 30-2n-2e, pumped 28 bbl., natural, Trenton 4,530 ft., pay 4,557-71 ft., 4,604-18 ft., old well deepened from 3,414-4,647 ft.

Stokes, White County: Pure & Carter 2 J. M. Neif, SW NE NE 18-6s-9e, pumped 104 bbl., 40-qt. shot 2,782-2,800 ft., Benoist 2,772-97 ft., T.D. 2,800 ft.

(Continued on Page 77)

CALIFORNIA FIELD REPORT

Blackouts and War Hazards Intensify Market Problems

By L. P. STOCKMAN

LOS ANGELES, Calif., Dec. 15.—Just when every indication pointed to probable new consumption peaks for gasoline and fuel oil on the Pacific Coast, war broke out and there is now some question as to what the demand for the latter part of December and the early part of 1942 will be. Automobile travel has been severely restricted during the past week or 10 days due to blackouts along the Pacific Coast and the decision of people to remain home and forego the usual night trips to places of amusement. This is necessitated by the fact that during air-raid alarms all traffic stops. All cars must pull over to the curb and remain inactive until the all-clear signal is given. This may mean spending several hours in an idle automobile in pitch blackness. Rather than undergo this, many remain in their homes.

Obviously this restricts the demand for gasoline in addition to the fact that all sales stop during periods when the air-raid alarm has sounded. Travel up and down the coast has also been reduced to a minimum with a resulting decrease in demand.

The situation with respect to Washington and Oregon may become critical, although some gasoline and other refined products may be moved by tank car or by convoyed tankers. Certainly the area will ultimately be obliged to curtail consumption to some extent and this decreased demand will force California operators to effect additional curtailment of crude-oil production.

Every indication points to the probability that application of the new California conservation plan, which has been approved by government officials, will be rushed ahead. This may indicate that the new plan of conservation will go into effect January 1, 1942, or as soon thereafter as possible. This plan will be of great importance in the production of crude oil as it fits in admirably well with the present emergency and gives the committee ample authority to take any action deemed necessary by military authorities without the need of the military taking over actual control.

Raisin City Field Remains An Enigma Despite Drilling

The Raisin City field of Fresno County in the San Joaquin Valley continues to be the enigma that it started out to be and operators are still wondering if the field will prove to be a major accumulation or a lenticular condition in the Miocene that will prevent the field from reaching major proportions. Recent developments all indicate the existence of sand lenses as it is very difficult to correlate across comparatively small areas. Certainly there is a definite lack of uniformity and a sand trouble that is causing considerable difficulty in the completion of wells.

Seaboard's joint well with Union and Tide Water Associated, No. 66-13 in 13-15s-17e, has apparently found the lower zone wet after coring the gas sand above the oil-producing horizon at 4,978 ft. This gas zone originally found by Shell in the discovery well is not being produced in any of the several finished wells to date. Barndall Oil Co. found the Seaboard oil zone wet in 1 Ripperdan and has plugged back for another test. Barnsdall logged the gas sand at 5,003 ft., the Shell producing zone at 5,019 ft. and top of the Seaboard zone at 5,126 ft. Shell Oil Co. found the gas zone and the Shell zone immediately underlying the gas and Seaboard a few weeks ago found a new zone below the Shell oil zone. This gives the field one gas zone and two oil sands that are productive. The lower or Seaboard oil zone looks to be the best in the fields to date.

Riverdale Test Makes Salt Water

The Riverdale area located southeast of Raisin City and east and south of the Helm field does not look as hot today as it did a week or two ago because Ameradа's 45-26 Lawton in 26-17s-19e found salt water on a test of the Eocene interval 7,990-8,016 ft. The fluid which rose to within about 100 ft. of the surface was all salt water with no oil or gas in evidence. The hole has been plugged back to 7,963 ft. and the casing is being perforated at 7,460-80 ft. for a test of the Temblor showings in the Miocene.

This wildcat was carried down into the Cretaceous at 8,311 ft. but no showings of oil or gas were found. This area has been considered the most promising district in the state as the seismograph readings were extremely interesting. It is quite possible that the Miocene may be found productive in the present location and a further possibility that the present wildcat may not be favorably located with respect to structure.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	7	8,187	53,028
Coastal district	3	2,400	17,330
Los Angeles Basin	6	2,038	21,999
Gas wells: Delano gas field	1	.....	2,469
Rio Vista gas field	1	.....	3,894
Dry holes: Wildcats	1	.....	6,563
Total	19	.....	105,283

SAN JOAQUIN VALLEY COMPLETIONS

Altamont wildcat district, Alameda County: Shell 1 Nissen, 7-2s-30e, abandoned as unproductive commercially, T.D. 6,563 ft., formation test 6,027-6,180 ft. recovered 1,305 ft. gas-cut mud with slight blow, P.B. 6,027 ft., formation test 5,951-6,027 ft., open 1 hr., recovered 90 ft. gas-cut mud.

Coalinga Southeast, Fresno County: Standard 46-31-B fee, 31-19s-16e, flowed 2,600 bbl. 27.6 gravity, 0.6 per cent cut, 2,054,000 cu. ft. gas, 44/64-in. bean, pressures 890/1,150 lb., T.D. 8,177 ft., perf. 7,886-8,173 ft., Kreyenhagen 6,573 ft., green sand 7,800 ft., completed in Gatchell oil sand 7,889-8,177 ft. of Eocene age.

Coles Levee, Kern County: Ohio 19-F Kern County Land, 10-31s-25e, flowed 1,099 bbl., 31.9 gravity, 1 per cent cut, 863,000 cu. ft. gas, 43/64-in. bean, pressures 250/500 lb., T.D. 9,800 ft., perf. 9,487-9,687 ft., 9,707-97 ft., completed in Stevens oil sand of Miocene age 9,492-9,800 ft.

Delano gas field, Tulare County: Trico Oil & Gas Co. 1 Seymour-Bolz, 20-24s-23e, flowed 23,700,000 cu. ft. of gas, 128/64-in. bean, shut-in pressures 1,075/1,075 lb., T.D. 2,469 ft., perf. 2,400-69 ft., completed in A and B Mya zones of Pliocene age.

Greeley, Kern County: Standard 12-16 Kern County Land, 7-29s-26e, flowed 2,740 bbl., 33.6-gravity, 1.1 per cent cut, 840,000 cu. ft. gas, 48/64-in. bean, pressures 500/750 lb., T.D. 11,510 ft., perf. 11,263-11,510 ft., completed in Vedder zone of Miocene age 11,263-11,510 ft.

Mount Poso, Kern County: Shell 36 Security, 16-27s-28e, pumped 179 bbl., 15.1-gravity, 2 per cent cut, T.D. 1,973 ft., perf. 1,933-73 ft., completed in Vedder zone of Miocene age 1,938-73 ft.

Shell 37 Vedder, 9-27s-28e, pumped 406 bbl., 16.4-gravity, 5 per cent cut, T.D. 1,845 ft., perf. 1,615-89 ft., 1,765-1,845 ft., completed in Vedder zone of Miocene age 1,627-1,845 ft.

Rio Bravo, Kern County: Union 27-34 Kern County Land, 34-28s-25e, flowed 760 bbl., 40.9-gravity, 1 per cent cut, 810,000 cu. ft. gas, 38/64-in. bean, pressures 500/650 lb., T.D. 11,488 ft., perf. 11,455-88 ft., completed in Rio Bravo zone of Miocene age.

Rio Vista, Sacramento County: Texas Co. 1 Huth, 33-4n-3e, flowed 14,000,000 cu. ft. gas, 40/64-in. bean, pressures 950/1,200 lb., T.D. 3,894 ft., perf. 3,768-3,894 ft., completed in gas sand of Cretaceous age.

Ten Section, Kern County: Shell 57-29-A Kern County Land, 29-30s-26e, flowed 403 bbl., 33.7 gravity, 3 per cent cut, 270,000 cu. ft. gas, 10/64-in. bean, pressures 650/900 lb., T.D. 8,235 ft., perf. 8,020-8,232 ft., completed in Stevens oil sand of Miocene age.

SAN JOAQUIN VALLEY OUTPOSTS

Arvin, Kern County: Pacific West. Oil Co. 1 Houchin, 27-31s-29e, drilling 2,098 ft. in sand.

Richfield 2 Mott, 9-31s-29e, drilling and coring 6,382 ft., deepening from 6,155 ft., 8⅝-in. casing cemented at 5,945 ft.

Belridge, Kern County: Belridge Oil Co. 55-26 fee, 26-27s-20e, T.D. 10,800 ft. in hard sand, plugging and testing by stages, top Eocene 9,545 ft., elev. 658 ft.

Buena Vista Hills, Kern County: Honolulu 25-P fee, 10-32s-24e, T.D. 14,622 ft., P.B. 2,656 ft., perf. 1,695-1,755 ft., flowing 1,250,000 cu. ft. gas daily on test, elev. 916 ft.

Canal, Kern County: Shell 44-14-A Kern County Land, 14-30s-25e, drilling in sand and shale 11,735 ft., first Vedder zone test in field, elev. 325 ft.

Dyer Creek, Kern County: Shell 3 Smith-Cairns, 11-26s-27e, location.

Elk Hills, Kern County: Standard 24-19-R fee, 19-30s-23e, drilling 6,006 ft. in shale.

Standard 45-19-S fee, 19-30s-24e, drilling 11,177 ft. in sand and shale, testing may plug back, elev. 707 ft.

Standard 62-31-S fee, 31-30s-24e, drilling 7,070 ft. in sand and shale, elev. 1,220 ft.

Standard 237 Tupman, 36-30s-24e, T.D. 3,000 ft. in oil sand, putting on pump.

Greeley South, Kern County: Macrate, A. N., 1 Haberfelde, 32-20s-26e, drilling 12,035 ft. in sand and hard shale, top barren Stevens zone of Miocene age 8,090 ft., Olcese zone 11,180 ft., looking for Vedder, elev. 338 ft.

Helm, Fresno County: Amerada 5-27 Weyant, 27-16s-17e, drilling 4,984 ft. in sand and shale.

Jacalitos, Fresno County: Wilshire-Annex Oil Co. 21-26-E, 26-21s-15e, drilling 2,871 ft. in sand.

Marysville Buttes, Sutter County: Buttes Oilfields, Inc., 6 Buttes, drilling 1,253 ft., elev. 125 ft.

Midway-Sunset, Kern County: North Amer. Oil Cons'd. 1-28 W.P., 28-32s-23e, T.D. 10,410 ft. in hard siltstone, P.B. 9,343 ft., test of interval 8,851-9,343 ft. showed mud with trace of oil and gas, elev. 1,560 ft.

Mountain View, Kern County: Hogan Pet. Co. 1-A Bahrenburg, 32-30s-29e, drilling and coring in sand and shale 8,621 ft., will be deep test for Vedder zone.

Mount Poso, Kern County: Alpha Oil Co. 1 Elliott, 1-27s-28e, T.D. 1,042 ft. in granite, elev. 1,325 ft.

Shell 1 Griffiths fee, 5-27s-28e, drilling 1,825 ft. in oil sand and shale.

Shell 2 Griffits fee, 5-27s-28e, drilling 1,810 ft. in oil sand and shale.

Paloma, Kern County: West. Gulf 12-7 Symons, 7-32s-27e, T.D. 11,700 ft. in Pliocene oil sand, most easterly well in field, tested wet, recemented, preparing to complete in Paloma zone, elev. 299 ft.

West. Gulf 16-6 L.A.A.C., 6-32s-27e, derrick erected, to be drilled north of 12-7 Symons.

General Pet. 61-33 Gallagher, 33-31s-26e, grading location and hauling in rig material, immediate drilling projected.

Raisin City, Fresno County: Barnsdall 1 Ripperdan, 24-15s-17e, T.D. 5,138 ft., P.B. 5,057 ft., cemented casing 5,049 ft. for production test.

Seaboard 66-13 S.T.U., 13-15s-17e, drilling 4,990 ft. in sand and shale, top gas sand 4,978 ft.

Shell 7-18 Properties, Inc., 18-15s-18e, drilling 3,683 ft. in sand and shale.

Rio Vista, Solano County: Standard 1 Perry Anderson, 2-3n-2e, rigging up for immediate spud.

Standard 3 State, 6-3n-3e, drilling in sand and shale 2,582 ft.

Shafter, Kern County: Continental 1 Neuman, 36-27s-24e, drilling 1,453 ft. in sand.

Tupman, Kern County: Shell 88-19-B Kern County Land, 19-30s-25e, drilling 9,492 ft.

Union Avenue, Kern County: Hancock Oil Co. 4 Roberts, 6-30s-28e, drilling in sand and shale 2,984 ft.

Richfield 2 Union Avenue, 6-30s-28e, drilling 3,268 ft. in sand and shale.

SAN JOAQUIN VALLEY WILDCATS

Belridge district, Kern County: Ivey Drilling Co. 1 Belridge, 12-29s-21e, T.D. 1,138 ft. in sand and shale, P.B. 1,103 ft., 8⅝-in. casing cemented 925 ft., bailing, elev. 563 ft.

Ciervo district, San Benito County: Texas Co. 1 Carter, 3-17s-12w, drilling 2,640 ft. in sand and shale.

Helm district, Fresno County: General Pet. 75-33 Esperoad, 33-16s-17e, derrick erected.

Kerman district, Fresno County: Richfield 1 Ponte, 30-13s-17e, location.

McDonald anticline district, Kern County: Texas Co. 1 Anderson, 19-28s-20e, T.D. 6,777 ft. in shale, P.B. 4,852 ft., elev. 1,080 ft.

Riverdale district, Fresno County: Amerada 45-26 Lawton, 26-17s-19e, drilling 8,311 ft. in sand and hard shale of possible Cretaceous age, will plug and test Temblor showings.

Selma district, Tulare County: Goble, W. E., 1 Selma, 28-16s-23e, drilling in shale 1,508 ft.

Shafter district, Kern County: General Pet. 51-15 S.P., 15-28s-24e, drilling 13,012 ft. in hard shale and sand, reaming and cleaning out.

Shale Hills district, Kern County: Morton, H. C., 1 Core hole, 30-26s-19e, T.D. 2,205 ft. in shale and oil sand, P.B. 1,000 ft., pumped 13 bbl. of 13.3-gravity oil, cleaning out.

Two Castaic District Tests Provide Important Information

Texas Co. has an interesting wildcat under way in the Castaic district of Los Angeles County in the coastal region and plans are under way to make a production test of oil and gas showings found between 6,000 and 6,150 ft. This wildcat has shown a number of oil and gas indications below 4,500 ft. and while this was considered a good omen in the upper part of the hole the objective of the well was the Modelo of Miocene age. The wildcat in question is 1 Fernando in 11-4n-17w, which is being drilled for Texas Co. by the Mabee Drilling Co.

Developments in the Del Valle field (pronounced Del Vahyee) were not especially encouraging. R. E. Havenstrite has completed 1 Liebhart at 6,797 ft., but the flow which is going into tanks is still cutting rather high and does not show much evidence of cleaning up. This well is located east of the discovery well in the Del Valle field and tends to indicate the field may prove to be rather narrow.

Old Pumper Flows When Reopened

O. C. Field Gasoline Corp. got a surprise in the Casmalia field early in the week when 62 Arellanes, an old pumper that has been idle since October 1925,

started flowing when it was returned to production. The well began flowing when the pump was started, but was later shut in until tankage could be provided. It is not likely that this well will maintain a steady flow but it is the present intention to give it a chance to do so.

This is one of the earliest fields in the coastal district and its crude oil, as a rule, tests about 10° A.P.I. gravity. Due to the heavy crude oil produced at Casmalia, the field has been quite inactive for several years. This oil is exceptionally well suited for the manufacture of asphalt and roofing material which suffered drastic reductions a year or two ago. Asphalt prices have since been increased.

Old Test at Aliso Canyon to Be Deepened

In the Aliso Canyon field, Universal Consolidated Oil Co. has taken over the Ward property which was once held by Standard Oil Co. and on which the latter drilled a dry hole to 6,909 ft. Universal is preparing to resume work in this abandoned hole and will deepen it to a lower zone found by Tide Water Associated Oil Co. a short time ago in 12 Porter.

The Ward property is located in 27-3n-16w and the well, 1 Ward, has 18⅝-in. casing cemented at 372 ft. In 26-3n-16w, Tide Water Associated Oil Co. is drilling ahead in 1 Mission in siltstone and gray sand at 7,700 ft. These two wells are only about 1 mile apart. In 25-3n-16w, Shell Oil Co. has started a wildcat on the Mission property but it will be several weeks before it resumes a depth comparable with that of the Associated wildcat.

This area is quite rough and the topography irregular. Considerable faulting has occurred also.

COASTAL DISTRICT COMPLETIONS

San Miguelito, Ventura County: Continental 25 Grubb, 23-3n-24w, flowed 1,734 bbl., 28.5-gravity, 3 per cent cut, 2,462,000 cu. ft. gas, two 64/64-in. beans, pressures 300/1,250 lb., T.D. 6,805 ft., perf. at intervals 5,674-6,805 ft., completed in Grubb zone of Pliocene age.

Santa Maria Valley, Santa Barbara County: Brain & Kohler 2 Rembush, 35-10n-34w, pumped 419 bbl., 15.9-gravity, 3 per cent cut, T.D. 5,250 ft., perf. 4,822-5,248 ft., completed in productive zone of Miocene age.

Palm Holding Co. 4 Bill Junior, 26-10n-34w, pumped 247 bbl., 14.2-gravity, 1 per cent cut, T.D. 5,275 ft., perf. 4,838-5,270 ft., completed in Santa Maria Valley zone of Miocene age.

Ventura Avenue, Ventura County: Shell 26 Edison, 28-3n-23w, flowed 785 bbl., 31.5-gravity, 0.4 per cent cut, 1,720,000 cu. ft. gas, 48/64 to 16/64-in. bean, pressures 950/1,550 lb., T.D. 8,150 ft., perf. 7,450-7,801 ft., 7,839-8,147 ft., recompleted in Ventura Avenue oil sand of Pliocene age, deepened from 7,130 ft.

COASTAL DISTRICT WILDCATS

Aliso Canyon district, Los Angeles County: Associated 1 Mission, 26-3n-16w, drilling 7,740 ft. in siltstone and gray sand, elev. 2,709 ft.

Shell 2 Mission, 25-3n-16w, drilling 2,060 ft. in sand and shale, elev. 1,505 ft.

Universal Cons'd. 1 Ward, 27-3n-16w, T.D. 6,909 ft., will resume work and deepen.

Casmalia district, Santa Barbara County: O. C. Field Gasoline Corp. 2 Righetti, 13-9n-35w, drilling in brown shale 2,282 ft., Miocene 938 ft.

Castaic district, Los Angeles County: Texas Co. 1 Fernando, 11-4s-17w, drilling 6,190 ft. in sand and shale, showing oil, may test, elev. 1,251 ft.

Cat Canyon district, Santa Barbara County: Bell, A. E., 1 Gilmore, 23-9n-33w, T.D. 6,202 ft., 7-in. casing cemented 4,930 ft., bailed dry, may deepen, elev. 767 ft.

Standard 4 Los Flores, 27-9n-33w, drilling in sand and shale 3,373 ft.

Union 12 Bell, 27-9n-33w, drilling 4,938 ft. in sand and shale, offsets Standard Oil Co. 2 Los Flores.

Union 13 Bell, 27-9n-33w, rig.

Loma Grande district, Monterey County: Loma Grande Oil Co. 1 Corey, 23-24s-10e, T.D. 3,820 ft. in shale, sidetracked fish and cemented 6⅝-in. casing 3,510 ft., found hole in pipe 1,925 ft., tested wet, recemented, elev. 1,500 ft.

Lompoc, Santa Barbara County: Fickert Oil Co. 1 Lompoc, 8-7n-33w, rigged up.

Los Alamos district, Santa Barbara County: Royalty Service Corp. 1 Careaga, 8-8n-33w, drilling in sand 1,461 ft.

Newhall district, Los Angeles County: Young, R. W., 1 Walker, 11-4n-16w, drilling 6,652 ft. in Mint Canyon hard gray sand and hard siltstone, 18° dips, Miocene 5,078 ft., elev. 1,254 ft.

Willis, C. G., 1 Ferguson, 36-4n-17w, drilling 3,461 ft. in sand and shale.

Rincon, Ventura County: C. C. M. O. Co., 3-C Hobson, 17-3n-24w, T.D. 10,515 ft., redrilling 9,660 ft. in oil sand.

Towsley Canyon district, Los Angeles County: Barnsdall & Ambassador Pet. 1 Limebocker, 17-3n-18w, drilling 5,295 ft. in hard sand and shale, landed 9⅝-in. casing as protection string 4,404 ft., elev. 1,680 ft.

Only Six Rigs Running In Inglewood Field

Hogan Petroleum Co. completed 4-A Machado in the Inglewood field late in the week and it is the present intention to hang up tools for the time being by Dana Hogan, president of the company. Hogan's new well looks good for about 1,800 bbl. daily but is still building up and may reach 2,000 bbl. These wells are not allowed to produce wide open but are produced for short periods with larger beans and then reduced.

Texas Co. has finished redrilling its 8 Smith, which failed to come up to expectations upon completion a few months ago at 8,412 ft. and should have it ready to go on production again within a few days. The new redrill depth of 8 Smith is 8,300 ft. and about 400 ft. of formation will be open to production. Drilling operations in the Inglewood field have been reduced to the point where there are only six uncompleted drilling wells under way. A number of new locations have been spotted but work is going along rather slowly due to some extent to the inability to secure adequate drilling equipment.

Operations at Wilmington Again on Increase

Drilling operations in the Wilmington field are again on the increase with 30 locations staked or rigs standing. This is the largest number of projected wells for this field in over a year. This does not indicate that all will be drilled immediately but does indicate that the field will continue rather active for another several months. At present there are 10 strings of tools in operation and most of these wells will be finished in another 2 weeks.

There have been no developments to indicate that there will be any change in the status of the Ford zone of Miocene age which is being held up and it is not likely that this horizon will be opened for exploitation in the near future. Much depends, however, on operation of the new California conservation program and whether the existing war will prevent the movement of production from fields that have no outlet except by water. This may prove to be a very important factor in future production as it will mean that all tankers will have to be convoyed and this may not be possible until a later date.

Any difficulty experienced in moving crude and refined-oil products by water would vitally affect the Pacific Northwest and force marketing companies to change their method of transportation. Vitally affected will be the Elwood field which depends entirely upon water transportation and likewise any movements from Estero and Port San Luis Obispo. It remains to be seen just what will be done with these fields and whether any relief will be afforded under the new conservation plan.

(Continued on Page 71)

Facing the
NEW YEAR . . . . .

IF you include *The Oil Bank of America* in your financing program for 1942, you will find this banking connection an important factor in the success of your operating program for the New Year.

NATIONAL BANK OF TULSA
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Major Importance Attached to Barber County Discovery

By ROBERT INGRAM

OPENING of production from the Kansas City lime series in Barber County by Pryor & Lockhart 1 Massey, E½ NE NW 35-30-15w, (see The Oil and Gas Journal, December 11, 1941, p. 75) added another major development to the Kansas play last week. Barber County is well to the southwest of the general play along the Barton arch (Central Kansas uplift) and is probably located along the margin of the big Anadarko basin of both Kansas and Oklahoma which has come in for both exploration and development in all sectors in recent months.

Full significance of the strike from a regional standpoint was not yet apparent last week, but considered as important was the fact that the Kansas City was producing in 1 Massey at below 4,342 ft. which is about 1,000 ft. lower than production from that series in the Barton arch pools. Also noted was the initial flow of the well of an estimated 125 bbl. an hour which classed it as one of the outstanding producers of the state.

Present production from Barber County is small and comes from the Lake City pool, which produces from Viola at 4,435 ft. and the Arbuckle at 4,607 ft.; the Medicine Lodge pool, producing from the Misener sand at 4,845 ft.; and the Whelan pool, producing from the Mississippi chat at 4,355 ft.

Last month the first Simpson sand production in Barber County was opened by Pryor & Lockhart 2-C Gant in 18-31-13w, a new pay zone for the Lake City pool. This too emphasized the possibilities of structures in the northeast margin of the Anadarko basin, particularly since Simpson sands are principal objectives of operators now exploring various parts of the region.

Five New Pools Opened In Kansas During November

A month-end survey of drilling in Kansas showed that five new pools were opened during November, bringing the total 1941 discoveries to date to 37. They were Hall-Gurney Dodge lime pay, opened by Pidgeon Oil 1 Flegler in 1-15-14w; East Pawnee, Barton County, opened by Helmerich & Payne 1 Unruh in 17-20-15w; Friendship, Reno County, found by Rocket Drilling Co. 1 Soper in 18-31-13w; Kansas City lime pay in Eberhardt, Rice County, opened by Vickers Petroleum 1-C Herr in 24-19-11w; and Simpson pay in the Lake City pool, Barber County, tapped by Pryor & Lockhart 2-C Gant in 18-31-13w.

Peace Creek Extension Wells Still Testing

Both the discovery wells northeast of the Peace Creek pool in Reno County were confirmed during the week to extend the Zenith-Peace Creek Viola lime trend play several miles. Production tests had not been taken on either well, but both made good flows after acid treatment.

Three miles from Peace Creek, Iron Drilling Co. and Central Petroleum Co. 1 Hendrickson, W½ NW NE 2-23-10w, was reported to have flowed 30 bbl. an hour from the Viola at 3,678 ft. and was still testing. Leader Oil Co. 1 Tonn, SE SE 11-23-10w, 1½ miles northeast of Peace Creek, made 15 bbl. of oil an hour through a ⅝-in. choke on latest tests.

Lindsborg and Kraft-Prusa Get Extensions

Lindsborg pool in McPherson County was extended ½ mile southeast by M. & L. Oil Co. and Jay Kornfeidl 1 Johnson, W½ SW SE 7-17-3w, which was given a potential of 759 bbl. a day from Viola lime at 3,354 ft. after acid. . . . Central Petroleum 1 Ward, SE NW 11-26-12w, northwest of Preston in Pratt County, was completed after several weeks of testing as a gas discovery with a potential of 3,729,000 cu. ft. from the Viola at 4,107-19½ ft. . . . Kraft-Prusa pool in Barton County was extended 1½ miles east by J. J. Lynn 1 Kraft, S½ SE NW 36-16-11w, which had a potential of 56 bbl. from Arbuckle dolomite at 3,370 ft.

Third Well in Patterson Pool Nearing Completion

In another new area of major significance, Stanolind Oil & Gas Co. was in the pay at 1 Niblock, E½ NE NE 26-22-38w, a south offset to the discovery well of the Patterson pool of Kearny County. Patterson sand was topped at 4,735 ft., and crews were drilling into the sand with standard tools after setting casing. When completed, the 1 Niblock will be the third producer for the new pool. The second producer, 1 Gropp, was officially completed last week (see completions.)

Like the recent Barber County developments to the east (see above), the Patterson pool was a part of the Anadarko basin play and opened a new region for exploration.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	23	25,685	75,189
Wildcats	1	39	4,005
Gas wells: Wildcats	1	*2.73	4,320
Dry holes: Fields	2	.....	6,731
Wildcats	7	.....	25,276
Total	34	.....	115,521
Disposal wells	1	.....	3,602
Recompletions	2	16	.....

* Million cu. ft.

KANSAS COMPLETIONS

Wildcats

Barton County: Phil-Han and Skaer 1 Grosshardt, NE NE SE 17-17-11w, dry, T.D. 3,365 ft., anhydrite 695 ft., Fort Riley 1,655 ft., Topeka 2,710 ft., Lansing 3,048 ft., Arbuckle 3,323 ft.

Edwards County: Falcon-Seaboard et al 1 Newsom, NW NW SE 1-26-18w, dry, T.D. 4,939 ft., anhydrite 1,220 ft., Topeka 3,510 ft., Lansing 4,046 ft., Mississippi 5,540 ft., Viola 4,600 ft., Simpson 4,830 ft., Arbuckle 4,866 ft.

Leavenworth County: Mosbacher 1 Locke, NE SW 19-9-21e, dry, T.D. 1,505 ft., Hertha 640 ft., Mississippi 1,366 ft.

Ness County: Hunt Oil 1 Ryersee, SW NE 35-18-21w, dry, T.D. 4,300 ft., Lansing 3,616 ft., Mississippi 4,150 ft.

Norton County: Helmerich & Payne 1 Central Trust, E½ SE NE 25-2-23w, dry, T.D. 3,661 ft., anhydrite 1,885 ft., Topeka 3,215 ft., Lansing 3,375 ft., Arbuckle 3,611 ft., show heavy black oil.

Osborne County: Vickers Petroleum 1 Koelling, S½ SE SE 31-9-15w, dry, T.D. 3,163 ft., anhydrite 1,184 ft., Topeka 2,809 ft., Lansing 3,163 ft.

Pawnee County: Stanolind 1 Paramore, S½ N½ SE 11-23-17w, dry, T.D. 4,343 ft., anhydrite 1,093 ft., Fort Riley 2,240 ft., Florence 2,338 ft., Lansing 3,700 ft., Viola 4,212 ft., Simpson 4,243 ft., Arbuckle 4,283 ft.

Pratt County: Central Petroleum et al 1 Ward, E½ SE NW 11-26-12w, gaged 2,729,000 cu. ft. gas, R.P. 1,031 lb., Viola 4,105 ft., 5-in. 4,125 ft., P.B. 4,140 ft., acid; tops: Topeka 3,487 ft., Lansing 3,519 ft., Mississippi 4,020 ft., T.D. 4,320 ft., *discovery.*

Trego County: Aylward Production and Barnett Drilling 1 Schaefer, SW SW NE 10-12-21w, pumped 30 bbl. oil and 75 bbl. water, Arbuckle 3,984 ft., 5-in. 3,985 ft., acid and shot; tops: Lansing 3,626 ft., base Kansas City 3,854 ft., T.D. 4,005 ft., *discovery.*

Fields

Atherton, Russell County: Shell 1 Brown, NE NE SE 31-13-14w, old well, old T.D. 3,313 ft., Arbuckle 3,301 ft., P.B. 3,209 ft., dry.

Bemis, Ellis County: Deep Rock 34 Baumer, E½ NW SE 27-11-17w, pumped 1,675 bbl., Arbuckle 3,564 ft., 4-in. 3,565 ft., acid, T.D. 3,586 ft.

Cities Service 7 Colahan-C, E½ NE SE 24-11-17w, potential 3,000 bbl., pumping, Arbuckle 3,358 ft., 5-in. 3,358 ft., T.D. 3,360 ft.

Bloomer, Rice County: Transwestern et al 6 Roesler, W½ SW NW 6-18-10w, pumped 812 bbl., Arbuckle 3,237 ft., 5-in. 3,237½ ft., acid, T.D. 3,245 ft.

Cunningham, Pratt County: Skelly 8 East Maxedon, S½ S½ NE 25-27-11w, pumped 236 bbl. oil, 24 per cent water, Lansing 3,403 ft., 5-in. 3,407 ft., acid, T.D. 3,464 ft.

Gulf 1 McClellan-B, N½ NW SW 36-27-11w, pumped 100 bbl. oil and some water, Lansing 3,487-3,510 ft., 8-in. 3,468 ft., acid, T.D. 3,541 ft., P.B. 3,510 ft.

Skelly 6 Miller, S½ SW NW 36-27-11w, location abandoned.

Feltes, Barton County: Lario Oil & Gas 1 Weber-B, S½ SW SE 11-16-12w, old well, old T.D. 3,378 ft., Arbuckle 3,368 ft., P.B. 3,355 ft. in Gorham sand, pumped 16 bbl.

Graber, McPherson County: Continental 11 Huxman, W½ W½ NW 29-21-1w, pumped 481 bbl. oil, 6 per cent b.s., Hunton 3,292-97 ft., 6-in. 3,277 ft., acid, T.D. 3,321 ft., P.B. 3,300 ft.

W. C. McBride, Hollow & Derby 1 Stucky, N½ NE SW 6-22-1w, dry, T.D. 3,361 ft., Hunton 3,337 ft.

Hall-Gurney, Russell County: Cities Service 6 Ebel-B, S½ NE SE 24-14-14w, pumped 314 bbl., Lansing 2,889 ft., 5-in. 2,904 ft., acid, T.D. 2,932 ft.

Hugoton, Grant County: R. K. Wilson 1 Sledd, C SE 11-28-37w, old well, T.D. 2,649 ft., old gage 6,836,000 cu. ft. gas, acid, gaged 8,534,000 cu. ft. gas.

R. K. Wilson 1 Bonnsteffgel, C SE 16-28-37w, old well, T.D. 2,720 ft., old gage 5,726,000 cu. ft. gas, acid, gaged 10,394,000 cu. ft. gas.

R. K. Wilson 1 Whitson, C NW 17-28-37w, old well, T.D. 2,685 ft., cleaned out to 2,683 ft., old gage 5,881,000 cu. ft. gas, acid, gaged 8,875,000 cu. ft. gas.

R. K. Wilson 1 Burnham, C SW 18-28-37w, old well, T.D. 2,660 ft., old gage 3,587,000 cu. ft. gas, acid, gaged 7,449,000 cu. ft. gas.

R. K. Wilson 1 Bank, C NE 20-28-37w, old well, T.D. 2,685 ft., old gage 2,821,000 cu. ft. gas, acid, gaged 5,488,000 cu. ft. gas.

Panhandle Eastern Pipe Line 1-24 Younggren, C NW 24-32-39w, old well, T.D. 2,749 ft., old gage 12,000,000 cu. ft. gas, dropped to 2,306,000 cu. ft., acid, gaged 10,528,000 cu. ft. gas.

Panhandle-Eastern Pipe Line 1-1 Phillips, C NW 1-34-38w, old well, T.D. 2,800 ft., old gage 9,534,000 cu. ft. gas, dropped to 5,934,000 cu. ft., acid, gaged 29,343,000 cu. ft. gas.

Pioneer Petroleum 1 Beavers, C NW 1-35-38w, old well, T.D. 2,843 ft., old gage 8,200,000 cu. ft. gas, dropped to 4,621,000 cu. ft., acid, gaged 24,403,000 cu. ft. gas.

Lost Springs, Marion County: Harwood Oil 12 Novak, W½ E½ SW 28-17-4e, pumped 231 bbl., Mississippi 2,388 ft., 5-in. 2,390 ft., T.D. 2,424 ft.

McLouth, Leavenworth County: Longwell 3 Bankers Life, SE NW SW 3-10-20e, pumped 77 bbl., Bartlesville, pay 1,421-29 ft. and 1,439-49 ft., 6-in. 1,417 ft., shot, T.D. 1,461 ft.

Patterson, Kearny County: Stanolind 1 Emma Gropp, W½ SW SW 24-22-38w, pumped 461 bbl., Patterson sand 4,741 ft., 5-in. 4,742 ft., T.D. 4,760 ft.

Pawnee Rock, Pawnee County: Stanolind-Amerada 1 Susie Deckert, W½ NW NE 24-20-16w, pumped and flowed 383 bbl. oil, 4 per cent water, Arbuckle 3,843-47 ft., 5-in. 3,848 ft., acid, perf., T.D. 3,847 ft.

Peace Creek, Reno County: Magnolia Petroleum 1 Yust, SW SW SW 15-23-10w, potential 3,000 bbl. flowing, Viola 3,775 ft., 5-in. 3,780 ft., acid, T.D. 3,788 ft.

Cities Service 2 Snowbarger, SW NW NW 22-23-10w, potential 3,000 bbl. flowing, Viola 3,789 ft., 7-in. 3,790 ft., acid, T.D. 3,801 ft.

Ray, Phillips County: Cities Service 4 Ray-A, NE NE SE 32-5-20w, pumped 2,245 bbl., La Motte 3,575 ft., 5-in. 3,576 ft., T.D. 3,600 ft.

Raymond, Rice County: Holl & Branine 1 Warner-C, S½ SE NE 16-20-10w, potential 4,297 ft., flowing, Lansing 3,090 ft., 7-in. 3,105 ft., T.D. 3,124 ft.

Colorado Petroleum 1 Thompson, S½ SE SW 17-20-10w, potential 3,000 bbl. pumping, Lansing 3,128-37 ft., 5-in. 3,146 ft., acid, perf., T.D. 3,150 ft.

East Roxbury, McPherson County: H. & M. Drilling 1 Alvin Anderson, E½ SE NW 21-17-1w, pumped 433 bbl., Mississippi 2,656½ ft., 5-in. 2,658 ft., T.D. 2,679 ft.

Stafford, Stafford County: F. C. Hall 2 O'Connor, E½ NE NW 14-24-12w, pumped 264 bbl. oil and 48 bbl. water, Viola 3,861-65 ft., 5-in. 3,855 ft., T.D. 3,866 ft., P.B. 3,855 ft.

Stoltenberg, Ellsworth County: Shell 2 J. D. Stevenson, SE SW SW 35-16-10w, pumped 248 bbl., Arbuckle 3,261 ft., 4-in. 3,262 ft., acid, T.D. 3,299 ft.

Trapp, Russell County: Leader Oil 3 Rude, W½ SW SE 28-15-13w, dry, T.D. 3,370 ft., Arbuckle 3,346 ft.

Shell 1-W Bitter-B, S½ NW SW 5-16-13w, salt-water disposal well, T.D. 3,602 ft.

Trapp, Barton County: Shell 4 Luerman, SW NE SW 18-16-13w, pumped 123 bbl., Lansing 3,131-38 ft., 4-in. 3,350 ft., perf. and acid, T.D. 3,351 ft.

Shell 8 Ehrlich-A, N½ NW 18-16-13w, pumped 1,230 bbl., Arbuckle 3,354 ft., 4-in. 3,355 ft., acid, T.D. 3,366 ft.

East Wherry, Rice County: Mid-Plains Oil 3 Nelson, S½ NW SW 12-21-7w, pumped 40 bbl. oil and lots of water, Sooy 3,391 ft., 7-in. 3,397 ft., T.D. 3,403 ft.

Reece, Greenwood County: I. Katz et al 1-B Life-B, SW NE SW 13-26-9e, pumped 35 bbl., Mississippi 2,113-18 ft., 6-in. 2,083 ft., acid. T.D. 2,121 ft.

Fifth Well Completed in Nebraska's Barada Pool

ST. JOSEPH, Mo., Dec. 15.—Skelly Oil Co. now has five wells in its new Barada pool of Richardson County about 8 miles north of Falls City. No. 1 Merz leaked oil around a casing shoe and did so well that the company decided not to perforate casing. No. 1 Steinbrink pumped 30 bbl. per hour in a 6-hour test. Both 4 and 5 Roesch were going down. About ¾ mile northwest of the pool, Johnson and Short are preparing to drill 1 Horn. Johnson has bought a rotary rig from M. J. Lewis of Long Beach, Calif. Lewis will be remembered as the man who drilled the first Northwest Missouri well of the current Forest City basin play.

(Continued on Page 80)

New Pools Showing in Acadia And Jefferson Davis Parishes

By F. L. SINGLETON

NEW ORLEANS, La., Dec. 15.—Although not officially completed, Stanolind 1 G. T. Tweedel, a wildcat located on the Lewisberg prospect, Acadia Parish, showed wash water and oil while testing through perforated casing at 10,140-50 ft. The test was made on a 5/32-in. choke, and tubing pressure built up to 1,000 lb.

Before the well had cleaned itself, the casing started to leak at the base of the christmas tree, and at the close of the week it had been killed and another test was scheduled to be made. This appears to be a high gas-oil ratio producer which is typical of most production developed in this area. Additional sands showing gas or distillate production were logged by an electrical survey at 9,400 ft., and 9,600 ft. Location of the new strike is in 77-7s-3e.

Along this same trend, and located in the Thornwell area, Jefferson Davis Parish, Cities Service 1 Lacassine Co., 36-11s-5w, is preparing to drill plug after a protection string of 7⅝-in. casing was cemented on bottom at 9,836 ft. The casing was cemented as protection after sand showing gas was logged at 9,626-45 ft. The well is reported to be checking considerably higher than wells in the Lakeside field, several miles to the south. To the northwest, and located in the Hayes area, Gulf 2 Calcasieu National Bank continues to drill ahead in sandy shale below 11,783 ft., and is reported to be showing considerable gas pressure.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	15	3,647	119,671
Dry holes: Fields	5	.....	35,868
Total	20	.....	155,539

Two Tests Fail to Produce

In the Lakeside field, Cameron Parish, Superior 1 Paggi, several hundred feet from production, is bottomed at 11,059 ft., and is being tested through perforated casing at 9,920-70 ft. No shows of oil or gas were logged below 10,000 ft.

J. A. Hafner, Jr., 1 Nevils, a wildcat located in 10-7s-6w, Allen Parish, was marked off the list as a dry hole at a total depth of 8,014 ft. The well topped the Heterostegina at 5,632 ft., and an electrical survey showed a small "kick" at intervals from 5,632-82 ft. However, sidewall cores of the section fail to show any encouragement, and the well was abandoned.

This test was located on a farmout from Stanolind Oil & Gas Co., and bottom-hole money is reported to have been contributed by Humble Oil & Refining Co., Crown Central Petroleum Co., and Union Producing Co.

Vinton Flank Pay Limited to Small Area

That the new producing area recently opened on the southwest flank of the old Vinton field, Calcasieu Parish, will be confined to a small area was indicated by Union Sulphur 3 Gray, about 500 ft. northeast of the discovery well. No shows of oil or gas were logged after drilling to a total depth of 4,511 ft., and the hole has been plugged back, sidetracked and is now redrilling at 1,213 ft. The discovery well was completed at 3,605-14 ft. for an initial production of 185 bbl. daily. However, it is now reported to be making considerable salt water, and will probably be recompleted.

Lake Chicot Extended a Mile

A new sand opened in the Lake Chicot field, St. Martin Parish, extended production approximately 1 mile northeast. The extension was made by Amerada 2 State in 31-11s-10e, which flowed 160 bbl. of 50-gravity oil in 7 hours through a 5/32-in. choke from perforated casing at 8,150-75 ft. This is the second well to be drilled on the structure from which production was originally established in the Miocene sand at 9,025-40 ft.

Weeks Island Salt Dome Flanks to Be Tested

Weeks Island, Iberia Parish, one of the last remaining salt domes of the Five Island group which has been void of any recent developments, is to be explored by Shell Oil Co., Inc., which is preparing to move in for 1 Smith. Details of the location were not announced and it is not known what flank the well is to be drilled. However, the company is reported to have extensive holdings around the entire flank of the structure.

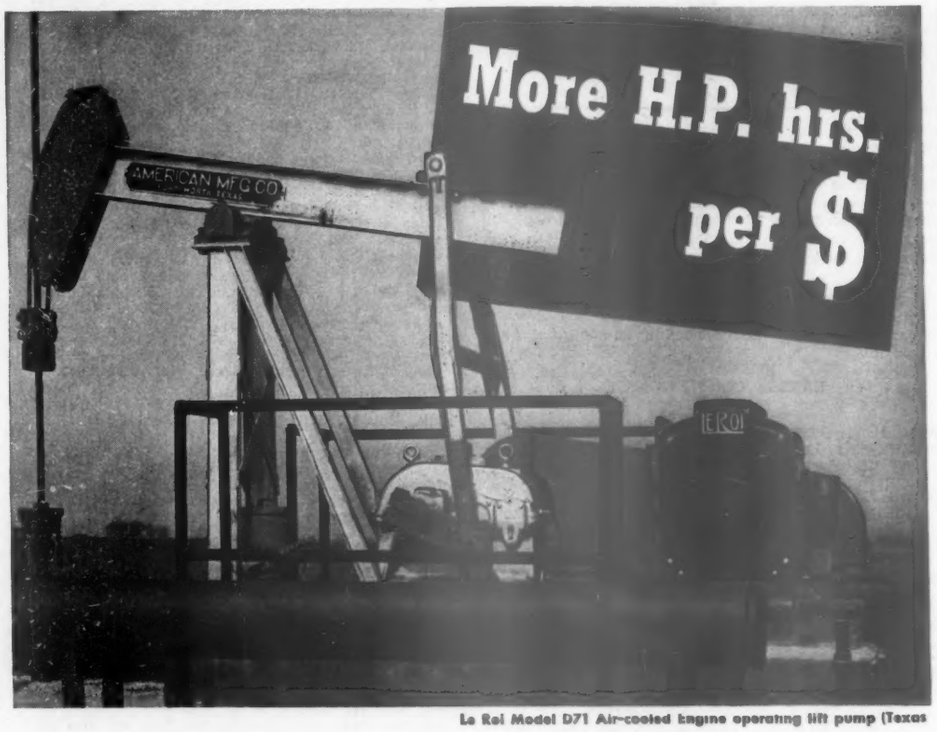
This old dome was discovered in 1897, and is one of five domes known as the Five Island group extending southeastward on a straight line from Iberia Parish to St. Mary Parish. Included in this group are Jefferson Island, Avery Island, in Iberia Parish, and Cote Blanche and Belle Isle in St. Mary Parish.

Flank development has opened production at Jefferson Island and Belle Isle, while several deep tests have been drilled recently at Cote Blanche and Avery Island. Salt has been mined at Weeks Island for several years, and only five tests have been drilled for oil, all being abandoned at comparatively shallow depths.

Lake Long Field Extended

A slight extension was recorded for the Lake Long field, La Fourche Parish, with the completion of Fohs 1 Aucoin, 700 ft. south of production, which is flowing at the estimated rate of 200 bbl. of oil daily through an 11/64-in. choke from perforated casing in sand at 10,218-28 ft. This sand has been logged in several wells, but the majority of the 14 completed wells are producing from several sands above 10,000 ft.

(Continued on Page 71)



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Discovery Rate in Indiana Boosted With Another Strike

By STAFF CORRESPONDENT

EVANSVILLE, Ind., Dec. 15.—The sixth pool opener in Indiana within recent weeks, Joe Dawson 1 John Patberg, SW NW NE 16-3s-7w, Pike County, is pumping between 1½ and 2 bbl. of oil an hour from the shallow Oakland City sand at 1,130-38 ft. No. 1 Patberg is 2½ miles southeast of the town of Stendal and 2½ miles southwest of a well drilled several years ago just west of Stendal that made 5 bbl. of oil. Leases on more than 500 acres of land south and west of Stendal were recorded in the county office within a few hours after pay was drilled at 1 Patberg.

Water Decreasing at Sullivan County Discovery

Sun Oil Co.'s discovery well in NE SE 17-6n-9w, 1 J. W. Queen, pumped 45 bbl. of oil and some water in its most recent 24-hour test. Previously the well had made 50 bbl. of oil and 85 bbl. of water in one day. No. 1 Queen is producing from a saturated zone in the McClosky at 1,325-29 ft. and is being pumped with a spudder. The well is approximately 10 miles south of nearest production in the old Sullivan field.

SUMMARY OF COMPLETIONS

Indiana

	No.	Bbl.	Footage
Oil wells	9	1,634	16,275
Gas wells	2	*0.52	1,639
Dry holes	3	.....	5,183
Total	14	.....	23,097
Recompletions	1	.....	.....

Ohio

	No.	Bbl.	Footage
Oil wells	6	151	7,934
Gas wells	17	*13.3	35,661
Dry holes	5	.....	11,389
Total	28	.....	126,984
Recompletions: Gas	1	*2.7	.....

Eastern Kentucky

	No.	Bbl.	Footage
Gas wells	5	*1.19	17,272
Dry holes	1	.....	3,356
Total	6	.....	20,628

Western Kentucky

	No.	Bbl.	Footage
Oil wells	2	95	1,618
Gas wells	2	*0.53	1,432
Dry holes	5	.....	5,835
Total	9	.....	8,885

* Million cu. ft.

Promising Posey County Wildcat Dry

A wildcat south and west of New Harmony, Sells Petroleum 1 Elliott-Hickman, SW SE SE 14-5s-14w, has been abandoned in the St. Louis lime at 3,084 ft. The St. Louis was topped at 3,075 ft. No. 1 Elliott-Hickman encountered oil shows in the Mansfield, Palestine, Waltersburg and Hardinsburg sands, but all of these showed water on drill-stem tests.

Meanwhile, an outpost to the new Mount Vernon field, ½ mile east of production, Martin & Volkmann 1 P. Hageman, NW NE SW 6-7s-13w, is drilling below 1,825 ft. and is expected to encounter the Waltersburg section within a short time. The Waltersburg sand is one of the two pay horizons in the field.

Carter and Gulf have staked two more locations in the field and materials are being moved on location for both operations. The new tests are 4 Erwin, NE NW NE 1-7s-14w, and 1 Mayville, NE NW SW 1-7s-14w. The discovery well is the only well completed so far in the field but several others are testing and nearing the completion stage.

INDIANA COMPLETIONS

Wildcats

Elkhart County: M. C. Pletcher 1 C. Vaughn, NE SE SE 13-38n-4e, dry, Trenton 1,887 ft., old well deepened from 1,929-2,021 ft.

Gibson County: R. D. Brown, Inc., 1 Antell, NE SE 20-1s-11w, pumped 290 bbl., natural, Ste. Genevieve 2,147 ft., pay 2,258-62 ft., T.D. 2,262 ft.

Posey County: Sells Pet. et al 1 Hickman-Elliott, SW SE SE 14-5s-14w, dry at 3,084 ft., Glen Dean 2,396 ft., Barlow 2,624 ft., Renault 2,831 ft., Ste. Genevieve 2,928 ft., St. Louis 3,077 ft.

Lindas et al 1 Thomas, NE NE SE 24-7s-13w, dry at 1,211 ft.

Carter and Gulf 1 Maier, N½ NE SW 1-7s-14w pumped 766 bbl. from Waltersburg and Cypress, Waltersburg 1,965-2,015 ft., Cypress 2,441-77 ft., T.D. 2,887 ft., P.B. 2,465 ft., *discovery well of Mount Vernon pool.*

Rossi & Gerber 1 Scherer, NW NW NE 13-7s-13w, location abandoned.

Fields

Bufkin South, Posey County: Lloyd Sloan et al 2 Seifert, S½ NW NW 30-6s-12w, pumped 95 bbl., 40-qt. shot 1,092-1,109 ft., T.D. 1,109 ft.

Riddle et al 1 Seifert, NW NE NW 30-6s-12w, pumped 55 bbl., 45-qt. shot 1,078-98 ft., Mansfield 1,078 ft., T.D. 1,098 ft.

Sloan et al 3 Seifert, SW SE NW NW 30-6s-12w, location abandoned.

Indiana Farm Bureau et al 1 Seifert, NE SW NW 30-6s-12w, pumped 35 bbl., 60-qt. shot 1,084-99 ft., T.D. 1,099 ft.

Griffin, Gibson County: Continental 53 Bozeman, NE NW NW 26-3s-14w, pumped 35 bbl., natural, ripped casing 2,626-37 ft., T.D. 2,779 ft.

Hatfield, Spencer County: George Hedges et al 2 Eble, SE NW NW 7-7s-7w, pumped 140 bbl., natural, sand 1,009-39 ft., T.D. 1,039 ft.

Heusler, Posey County: Jarvis Bros. 1 Gumbel, SE SW SE 36-6s-12w, pumped 114 bbl., 20-qt. shot 1,784-94 ft., Waltersburg 1,780 ft., T.D. 1,794 ft.

Hudsonville, Pike County: D. L. Norris 1 L. C. Peach, E½ SE SW NW 19-1n-6w, dry at 888 ft.

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Siosi, Vigo County: Siosi Oil 8 Williams, W½ E½ SE 32-10n-10w, pumped 104 bbl., natural, Devonian 2,115 ft., T.D. 2,208 ft.

Trenton, Wayne County: E. L. Root 1 Kain, NW NW NE 26-17n-12e, 70,000 cu. ft. gas, 40-qt. shot 835-57 ft., Trenton 831 ft., T.D. 885 ft.

Miscellaneous, Daviess County: R. D. Brown, Inc., 5 McCracken, S½ SE SE 16-2n-6w, 450,000 cu. ft. gas, pay 748-54 ft., T.D. 754 ft.

Pike County: Irvin & Powderly 3 McAtee, 1,670 ft. N line, 330 ft. W line, location, 12-1n-9w, dry at 1,670 ft., Glen Dean 1,172 ft., Golconda 1,282 ft., Barlow 1,365 ft., Ste. Genevieve 1,519 ft., water 1,638-64 ft.

Ohio Gas Well Gages Eight Million Cubic Feet

ZANESVILLE, Ohio, Dec. 15.—A gasser gaging better than 8,750,000 cu. ft., 8 miles southwest of Wooster in Wayne County, is the largest gas completion in this vicinity for several years. The test was completed by the Ohio Fuel Gas Co. on the Vesta R. Wile tract, Section 28, Plain Township. The pay was found in the Clinton horizon with the sand logged at 3,144-67 ft., total depth 3,169 ft. Three other tests are drilling in the area.

Exploration of the Clinton sand in northeastern Ohio is being continued by the Magnolia Petroleum Co. Their latest test is located in Lordstown Township, Trumbull County, Lot 20, 1½ miles southeast of Lordstown on the D. Giovannone 73.5-acre tract, 665 ft. south of north and center east and west. Drilling is now in progress.

Another fair well in the Clayton Township, Perry County, oil pool was completed by the Preston Oil Co. as 6 John H. Cookson, SE Sec. 8, which produced 214 bbl. the first day along with 100,000 cu. ft. gas from the Clinton sand at a depth of 3,304 ft.

OHIO COMPLETIONS

Athens County

Canaan Township: Crowley et al 2 Mansfield, Sec. 8, 50,000 cu. ft. gas, shot, second Berea, T.D. 1,553 ft.

Carthage Township: Ohio Fuel 1 Alex Justice, Sec. 4, 2,740,000 cu. ft. gas, Keener, T.D. 1,268 ft. (old well deepened from salt sand).

Rome Township: Wickens et al 5 Lewis Meeks, Sec. 16, 75,000 cu. ft. gas, Maxon, T.D. 921 ft.

Coshocton County

Perry Township: Robinson 3 Orville Hughes, Sec. 24, 800,000 cu. ft. gas, Clinton 3,102-47 ft.

Mauller & Patton 1 Nellie Ryan, Sec. 24, 260,000 cu. ft. gas, Clinton 3,128-53 ft., T.D. 3,153 ft.

Knox County

Brown Township: Knox Exploration 1 Gaines, Sec. 22, lost tools in hole while cleaning out but swabbing 100 bbl. day, shot, Clinton pay 2,701-16 ft.

Rupham & Ridgeway 1 M. T. Gains, SW Sec. 22, 45 bbl., Clinton sand, T.D. 2,709 ft.

Butler Township: H. E. Perkins 2 W. H. Lepley, Sec. 7, dry, Berea, T.D. 903 ft.

Union Township: H. E. Perkins 2 Arthur McMillan, SW Sec. 3, dry, Clinton sand, T.D. 2,877 ft.

Licking County

Eden Township: Natural Drlg. 1 Orville Booth, show gas, shot, did not improve, plugged, Clinton, T.D 2,760 ft.

Madison Township: D. C. Deem et al 1 fee, second quarter, 800,000 cu. ft. gas, shot, Clinton 2,468-98 ft., T.D. 2,502 ft.

Newark Township: George Lacknette et al 2 Kittie Gittings, first quarter, 550,000 cu. ft. gas, Clinton 2,583-64 ft.

Meigs County

Bedford Township: Ohio Fuel 1 Maggie Will, Sec. 25, show oil and gas, plugged, second Berea, T.D. 1,788 ft.

Rutland Township: M. M. Nelson 1 O. H. Kennedy, Sec. 28, 160,000 cu. ft. gas, salt sand, T.D. 684 ft.

Monroe County

Malaga Township: Clem Peters 3 fee, Sec. 28, 50,000 cu. ft. gas, shot, Berea, T.D. 1,933 ft.

Wayne Township: Gold Crown Oil 7 J. T. Christy, Sec. 19, 70,000 cu. ft. gas, Keener (Injun dry), T.D. 1,497 ft.

Noble County

Elk Township: R. L. Smithberger 5 E. Kilzer, Sec. 21, 10,000 cu. ft. gas, salt sand, (Maxon dry), T.D. 1,306 ft.

Seneca Township: Tilton Warne 1 S. E. Ruby, Sec. 27, 40,000 cu. ft. gas, shot, Berea, T.D. 1,535 ft.

Perry County

Reading Township: Dittoe et al I. P. Reed, Sec. 4, show gas, shot, plugged, Clinton 3,007-34 ft., T.D. 3,061 ft.

Summit County

Richfield Township: Ohio Fuel 1 V. D. Hadlock, Sec. 2, 500,000 cu. ft. gas, shot, Clinton, T.D. 3,469 ft.

Stark County

Perry Township: East Ohio 1 J. Kleinheinz, Sec. 34, 800,000 cu. ft. gas, shot, Clinton, T.D. 4,568 ft.

Washington County

Aurelius Township: Turner & Partlow 29 A. J. Longfellow, Sec. 7, ½ bbl., stray, T.D. 381 ft.

Barlow Township: Anderson et al 6 Lewis Liebrand, Sec. 4, 200,000 cu. ft. gas, Squaw, T.D. 1,606 ft.

Grandview Township: C. D. Uhl 13 J. A. Huffman, Sec. 22, 2 bbl., shot, first Cow Run, T.D. 858 ft.

Warren Township: Henderson Oil 43 J. A. Ruppert heirs, Sec. 6, 3 bbl. shot, first Cow Run, T.D. 670 ft.

Fearing Township: Albert Jahn et al 1 George Taylor, Sec. 99, 1½ bbl., Mitchell sand. This well was cleaned out in the Mitchell sand and drilled deeper to stray sand at 851 ft. which was dry. It is now producing from the Mitchell sand.

Ludlow Township: Hall & Henning 2 Henry E. Hall, NW Sec. 28, 342,000 cu. ft. gas, Germantown sand, T.D. 1,200 ft.

EASTERN KENTUCKY

ASHLAND, Ky., Dec. 15.—Five gas-well completions mark the report of drilling activities in eastern Kentucky last week. Several new locations were reported and operations continued on an even level despite the approaching holiday season. One dry hole was reported and several operations in this area are nearing the final-depth stage.

The five gas wells were completed by the Kentucky-West Virginia Gas Co. and have a combined daily open flow of 1,187,000 cu. ft. of gas. These completions are as follows:

Floyd County: Preston Hamilton 5336, Mitchell Fork of Mud Creek, T.D. 2,651 ft., shale, open flow 64,000 cu. ft. of gas.

Tolbert Akers 5347, Branham Creek, T.D. 2,953 ft. with 622,000 cu. ft. gas per day, open flow from shale.

Knott County: Richard Hall 5349, Dry Creek, Knott County, T.D. 2,990 ft., 127,000 cu. ft. gas, open flow from shale.

Pike County: William Ford 5351, Ford Branch, T.D. 3,317 ft., 63,000 cu. ft. gas, open flow from shale.

W. H. Burchett 5361, T.D. 2,851 ft. in shale with open flow of 311,000 cu. ft. of gas.

The Kentucky-West Virginia Gas Co. reports well No. 5353 on the J. M. Porter land on Levisa Fork in Floyd County as dry at a total depth of 3,356 ft. in Corniferous.

WESTERN KENTUCKY

Breckinridge County

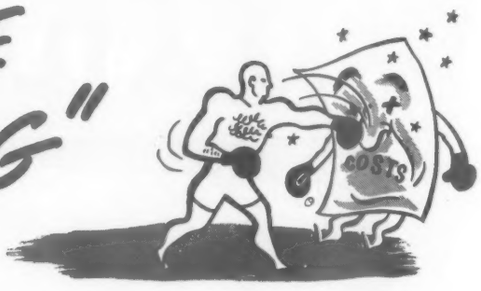
Cloverport district: W. J. Flesher 1 W. E. Bowen, dry, T.D. 467 ft.

Hancock County

Pellville district: Leeper Oil Co. 8 G. F. Rowland, 5 bbl. oil, 30,000 cu. ft. gas, shot 50 qt., Barlow sand 714-20 ft., T.D. 736 ft.

(Continued on Page 80)

"SELECTIVE BUYING"



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Caddo Lime Pool Is Opened in Clay County; Others Showing

By D. H. STORMONT

WICHITA FALLS, Tex., Dec. 15.—A new Caddo lime pool for Clay County was apparently assured last week by Continental 1 Earl Spring, Section 24, Block 4, H.&T.C. Survey. On a 30-minute drill-stem test, 1 Spring returned 1,900 ft. of 45.8-gravity oil and 200 ft. of oil-cut mud from 5,588-5,626 ft., total depth. Open pressure was 300 lb.

An electrical survey made on the test placed the top of the Caddo lime at 5,576 ft. Previously, two cores taken above total depth had recovered lime with stain and odor. Operator set 7-in. casing at 5,586 ft. and at the end of the week was preparing to drill plug for completion attempt.

No. 1 Spring is 5 miles west of the Ringgold field and that same distance east of the town of Henrietta.

Throckmorton County Wildcat May Open Shallow Area

A new shallow producing area for southern Throckmorton County is being indicated at Norman Rudman 1 Tecumseh Pasture Co. On a pumping test of the Cook sand at 8,668-77 ft., the test was estimated good for 10 bbl. of oil daily.

At last report, operator was running tubing for further testing. No. 1 Tecumseh Pasture Co. is located 750 ft. from the west and 900 ft. from the north line of the Comanche Indian Survey 21, about 3 miles west of the Howsley-McCord pool.

Oil Shows Logged in Denton County Test

A series of oil shows in the conglomerate were logged during the week at the Denton County wildcat being drilled by H. L. Hunt at 1 T. J. Jones, J. Thomas Survey. According to an electrical-survey report, the wildcat had saturated conglomerate from 5,322-30 ft., hard conglomerate with a show of oil from 5,363-67 ft., soft conglomerate again from 5,367-77 ft. and finally hard conglomerate from 5,377-84 ft., all showing oil.

At last report, 1 Jones was drilling ahead below 5,500 ft. after logging dry conglomerate from 5,438-48 ft. The wildcat is contracted to 6,000 ft. and will be drilled to that depth before setting casing for production tests.

Six Wildcats Staked

Six wildcat locations in as many counties were announced in North Texas during the week. Another wildcat test for northwestern Denton County will be drilled by H. L. Hunt about 9 miles northwest of Krum and 3 miles southeast of the operator's 1 Jones. The new wildcat will be 1 E. W. Forrester, 467 ft. out of the southwest corner of a 759-acre tract in the J. W. Chandler Survey.

No. 1 Forrester will be Hunt's third active test in the area. It is contracted to 5,000 ft.

In Clay County, Hunt has taken over the location of S. D. Johnson at 1 H. Watson. A scheduled 6,000-ft. test, 1 Watson is located 3,090 ft. from the east and 330 ft. from the north lines of the W. A. Farris Survey, about 2 miles north of production in the Henderson pool.

Continental Oil Co., one of the most active operators in North Texas, has spudded and set surface casing at a wildcat in Archer County. The test is 1 Ferguson, located 1,400 ft. from the east and 567 ft. from the north lines of the SE¼ of Section 1, S.P. Survey. No. 1 Ferguson is contracted to 5,000 ft. and is about 3 miles southwest of Holliday in the southeastern part of the county.

In Wichita County, 2 miles northwest of the shallow Sunshine Hill field, Cooper and Omohundro have staked 1 H. C. Obenhaus. Contracted to 6,000 ft., 1 Obenhaus is located 467 ft. from the north and west lines of the M.E.P. Survey 230.

Early in the week, Roeser & Pendleton, Inc., were moving in rig for the immediate drilling of 1 W. J. Webb. Located 530 ft. from the north and 470 ft. from the west lines of the J. E. Middleton Survey 2225, 1 Webb will be drilled to 3,100 ft. The wildcat is in the southeastern part of Jack County, northeast of the town of Perrin.

In Cooke County, John Grey has spudded 1 Greek, wildcat test 4 miles northeast of Gainesville. No. 1 Greek is located 330 ft. out of the northeast corner of a 70-acre tract in the S. Willis Survey and is contracted to 3,000 ft.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil wells: Antelope	2	400	6,494
K.M.A.	7	1,395	18,563
Nocona	2	16	1,848
Throckmorton	5	94	3,319
Other fields	5	470	9,935
Miscellaneous pools	22	1,138	28,040
Wildcats	1	12	6,065
Dry holes: Fields	5	.....	7,451
Miscellaneous pools	6	.....	9,181
Wildcats	3	.....	8,284
Total	58	.....	99,180

West Central Texas

	No.	Bbl.	Footage
Oil wells: Wildcats	1	3	4,721
Gas wells: Brown	1	*0.84	1,257
Dry holes: Akard	3	.....	3,163
Wildcats	3	.....	15,538
Total	6	.....	24,679

*Million cu. ft.

Lime Discovery Completed

A new Caddo lime pool for Montague County was officially opened at the end of the week with the completion of Continental 1 Winder, Section 4, Limestone C.S.L. Survey, 1 mile east of Stoneburg. No. 1 Winder was plugged back from the Ellenburger where it showed for a small producer.

On official Railroad Commission gage, the discovery flowed 450 bbl. of 44.8-gravity oil from casing perforations at 6,233-41 ft. Flow was through 20/64-in. choke on tubing with casing pressure of 740 lb. and tubing pressure of 100 lb.

NORTH TEXAS COMPLETIONS

Wildcats

Clay County: Bridwell 1 William H. Meyer, Charleton Thompson Sur., A-444, 12 bbl. in 24 hr., pumping, pay 5,778-92 ft., T.D. 6,065 ft.

Wilbarger County: Bruce Sullivan 1 Mattie Hamilton, Sec. 47, Blk. 12, H.&T.C. Sur., dry at 4,710 ft.

Wichita County: L. T. Burns 1 G. Buman, Loftin Vess Sur., A-318, dry at 2,100 ft.

W. H. Maer 1 R. C. Bolin, Loftin Vess Sur., A-318, dry at 1,474 ft.

Fields

Antelope, Clay County: Shell 2-A Coburn, Sec. 26-6, T.E.&L. Sur., 70 bbl. in 8 hr., est. 200 bbl., pay 3,202-50 ft.

Shell 3 E. Henderson, Sec. 2616, T.E.&L. Sur., 91 bbl. in 8 hr., est. 200 bbl., pay 3,196-3,208 ft., T.D. 3,244 ft.

Harrold, Wilbarger County: Big Six Oil Co. 1 P. F. Lesh, Sec. 3, Blk. 14, H.&T.C. Sur., 64 bbl. in 4 hr., pumping, est. 125 bbl., pay 3,162-74 ft.

Hull-Silk, Archer County: Henry Grace 5-B L. F. Wilson, Sec. 1, A.T.N.C.L. Sur., Blk. 87, 89 bbl. in 24 hr., pumping, pay 1,526-29 ft., T.D. 1,530 ft.

Jack, Jack County: T. C. Jones 3 C. A. Roach, W. Berryman Sur., A-40, 7 bbl. in 24 hr., pumping, top Gunsight 492 ft., pay 495-516 ft.

K.M.A., Archer County: C. H. Staley 22 Anna Mangold, Blk. 30, P. Castleman Sur., 144 bbl. in 24 hr., pumping, pay 1,728-35 ft.

K.M.A., Wichita County: Continental 20-C J. and J. Waggoner, Sec. 21, H. George Sur., A-454, dry at 1,895 ft.

Hammon, Hanlon-Buchanan 45 Fassett & Tuttle, Sec. 1, E.T. Sur., A-76, 66 bbl. in 3 hr., ¾-in. choke, est. 200 bbl., 120-qt. shot 3,986-4,007 ft., top K.M.A. 3,823 ft., T.D. 4,012 ft.

W. H. Peckhan 6 S. I. and H. M. Munger, Sec. 31, K.W.F.L. Sur., 9 bbl. in 24 hr., pumping, pay 1,124-29 ft.

Coppach & Coleman 20 W. L. Warren, Sec. 32, K.W. F.L. Sur., 58 bbl. oil and 10 bbl. water in 24 hr., pumping, pay 1,759-65 ft.

Tide Water and Perkins & Cullum 17 C. Pettit, E. Durian Sur., A-54, 174 bbl. in 2 hr., est. 750 bbl., top K.M.A. 3,636 ft., top Ellenburger 4,198 ft., 4,000 gal. acid 4,330-35 ft.

Wolf & Hull 7 Daume, Sec. 1, S.P. Sur., A-429, 9 bbl. in 24 hr., pumping, pay 690-94 ft.

Fain-McGaha Oil Corp. 7-A E. P. Griffin, W. H. Spillers Sur., A-257, 82 bbl. in 3 hr., ½-in. choke, est. 225 bbl., top K.M.A. 3,733 ft., 40-qt. shot 3,830-42 ft.

Mathis, Jack County: Charles H. Kadane 1 M. L. Knox, E.T. Sur., A-949, dry at 3,241 ft.

Joe Worsham 7 C. C. Leach, C. M. Snodgrass Sur., A-1314, 112 bbl. in 9 hr., ¼-in. choke, est. 225 bbl., 20-qt. shot 2,937-47 ft.

Nocona, Montague County: Continental 24-A N. J. Howard, J. Chambliss Sur., A-123, 9 bbl. in 24 hr., pay 919-55 ft.

W. H. Yeargin 9 J. W. Maddox, C. W. Thompson Sur., A-741, 7 bbl. in 24 hr., pumping, 20-qt. shot 865-90 ft., T.D. 893 ft.

Throckmorton, Throckmorton County: Burk Royalty Co. 18 A. M. Housley, Sec. 28, Comanche Indian Reservation, 17 bbl. in 24 hr., pumping, pay 698-722 ft.

Burk Royalty Co. 19 A. M. Housley, Sec. 28, Comanche Indian Reservation, dry at 825 ft.

J. B. Putman 3 J. B. Putman, Sec. 10, Comanche Indian Reservation, 31 bbl. in 24 hr., pumping, pay 644-77 ft.

J. B. Putman 5 J. B. Putman, Sec. 10, Comanche Indian Reservation, 26 bbl. in 24 hr., pumping, pay 646-75 ft.

R. E. Sweeney 3 R. W. Kelly, J. B. Graham Sur., A-1421, 15 bbl. in 24 hr., pumping, pay 553-75 ft.

W. Neustadt 6 W. McKeichen, Sec. 5, Comanche Indian Reservation, 5 bbl. in 24 hr., pumping, pay 606-70 ft.

R. F. Gillman 3 Susie Tuton, A. J. Kemp Sur., A-1369, dry at 740 ft.

R. F. Gillman 4 Susie Tuton, Sec. 2, A. J. Kemp Sur., A-1369, dry at 750 ft.

Wilbarger County: J. A. Woods & Sons 1-D Mary Womack, Sec. 1, Blk. 7, H.&T.C. Sur., 24 bbl. oil and 10 bbl. water in 24 hr., pumping, pay 1,765-68 ft.

Miscellaneous Fields

Archer County: Clark 1 G. F. Parsons, Sec. 3, Meade L. M. pasture subd., 10 bbl. in 24 hr., pumping, top Gunsight 1,413 ft., pay 1,429-39 ft.

Petroleum Prod. Co. 23 R. H. King, Sec. 7, B.B.B. &C. Sur., A-48, 45 bbl. in 24 hr., pumping, pay 1,240-52 ft.

Rathke Oil Co. 4 G. H. Roach, Sec. 1595, T.E.&L. Sur., 20 bbl. in 24 hr., pumping, pay 1,265-77 ft.

Clay County: Staley Oil Co. 4 E. H. Hamilton, Sec. 83, Byers Bros. subd., 44 bbl. in 12 hr., pumping, est. 60 bbl., pay 1,123-31 ft.

Dudley, Fisher & Kahn 1 C. T. Taylor, Sec. 41, Bacon subd., dry at 1,092 ft.

Perkins & Cullum 5-B C. T. Taylor, Sec. 42, Bacon subd., 56 bbl. in 24 hr., pumping, pay 1,130-41 ft.

Dudley, Fisher & Kahn 3 C. T. Taylor, W. Richardson Sur., A-1032, 80 bbl. in 24 hr., pumping, pay 1,126-41 ft.

Dudley, Fisher & Kahn 1 W. A. Henderson, S. Hernandez Sur., A-185, 24 bbl. in 6 hr., pumping, est. 60 bbl., pay 1,038-60 ft.

Dudley, Fisher & Kahn 2 W. A. Henderson, S. Hernandez Sur., A-185, 28 bbl. in 6 hr., pumping, est. 60 bbl., pay 1,043-55 ft.

Dudley, Fisher & Kahn 3 W. A. Henderson, S. Hernandez Sur., A-185, 18 bbl. in 6 hr., pumping, est. 60 bbl., pay 1,057-68 ft.

Dudley, Fisher & Kahn 4 W. A. Henderson, S. Hernandez Sur., A-185, 16 bbl. in 8 hr., pumping, est. 35 bbl., pay 1,047-53 ft.

Sussex Oil Corp. 26 C. J. Shumake, Sec. 3, Bacon subd., 33 bbl. in 12 hr., pumping, est. 50 bbl., pay 1,123-32 ft.

Houston Bowers 3 S. W. Rice, Sec. 14, Thornberry subd., 35 bbl. in 12 hr., pumping, est. 45 bbl., pay 1,114-29 ft.

G. G. Golden 1 P. Roop, Sec. 10, Thornberry subd. 25 bbl. in 24 hr., pumping, pay 1,100-12 ft., T.D. 1,118 ft.

E. C. Harlin 1 J. B. L. Hansard, Sec. 1, Thornberry subd., dry at 1,188 ft.

Harper & Knappenberger 8 Paul Bilbrey, Sec. 3 W. Wyatt subd., 30 bbl. in 24 hr., pumping, pay 1,153-71 ft.

Homer Lee 2 T. D. Wiley, Sec. 16, Pratt pasture subd., dry at 1,211 ft.

Cooke County: Kembell & Bohner 4 S. H. Hickey, J. McLerran Sur., A-781, dry at 2,540 ft.

Montague County: Lesh & McCall 3 C. L. Davenport, J. Fitch Sur., 31 bbl. in 6 hr., pumping, est. 75 bbl., pay 2,485-97 ft., old well drilled deeper.

Pace Petroleum Co. 1 M. M. Gilbert, E. A. Maynard Sur., A-1171, 175 bbl. in 24 hr., ¾-in. choke, pay 3,007-20 ft.

Wichita County: Julian E. Simon 1 Ed Heiserman Sec. 2, H.T.&B. Sur., A-478, dry at 2,010 ft.

C. F. Schram 3 Fred Daume, Sec. 1, S.P. Sur., A-429, 10 bbl. in 24 hr., pumping, pay 681-84 ft.

Young County: H. B. Street 8-C J. W. Jack, Sec. 23, Young C.S.L. Sur., A-1284, 4 bbl. in 24 hr., pumping, pay 558-64 ft.

H. B. Street 9-C J. W. Jack, Sec. 23, Young C.S.L. Sur., A-1284, 6 bbl. in 24 hr., pumping, pay 515-42 ft.

E. L. Orr 2 Pace & Strange, Sec. 5, Rohus Sur., A-240, 5 bbl. in 24 hr., pumping, top Gunsight 611 ft., 20-qt. shot 691-702 ft.

S. O. Ewing and Homer A. Thompson 1-A J. Courtney, Sec. 1394, T.E.&L. Sur., 12 bbl. in 24 hr., pumping, top Gunsight 827 ft., pay 830-38 ft.

Rone Oil Co. 17 G. M. Boren, R. Weyman Sur., A-2110, 6 bbl. in 24 hr., pumping, 10-qt. shot 1,064-80 ft., T.D. 1,088 ft.

Dorian & Mitchell 1 N. B. Teague, Sec. 436, T.E.&L. Sur., 275 bbl. in 24 hr., 14/64-in. choke, est. 300

bbl., 5,000-qt. shot 4,418-35 ft., top Caddo 3,931 ft., top Marble Falls 4,383 ft.

W. R. Stipe 2 Schlegel, Sec. 74, T.E.&L. Sur., dry at 1,140 ft.

NORTH TEXAS ACTIVE WILDCATS

Archer County: Sunray Oil Co. 1 Seibold, 560 ft. from E and 330 ft. from S lines, L. P. Jones Sur., A-939, Ellenburger test, moving in material to deepen, T.D. 5,049 ft.

Golding & Cochran 1 M. J. Kundel, 494 ft. from S and 750 ft. from W lines of Kundel land in B.B. B.&C. Sur., A-54, drilling 4,759 ft.

Clay County: Continental 1 Spring, 200 ft. from N and 1,254 ft. from W lines, Sec. 24, M. True Sur., A-1005, 6,500-ft. rotary test, running casing, T.D. 5,630 ft.

Shell 1 B. Williams, 330 ft. from N and W lines, E 60 acres, Sec. 63, J. H. Belcher Sur., 6,500-ft. rotary test, swabbing, T.D. 5,874 ft.

Superior Oil Co. 1 G. W. Scaling, 2,600 ft. from N and 1,200 ft. from W lines, Sec. 2, H.&T.B. Sur., A-882, 6,000-ft. rotary test, drilling 4,881 ft.

Cooke County: Saulsbury Oil Co. 1 W. D. Rowland, 330 ft. from S and 547 ft. from W lines of NW cor. L. B. Ladlock Sur., A-1027, testing 2,385 ft., P.B. from 3,006 ft.

Denton County: Hunt Oil Co. 1 T. J. Jones, 4,300 ft. from S and 671 ft. from E lines, J. Thomas Sur., A-1239, Ellenburger test, drilling 5,135 ft.

Foard County: Bruce Sullivan 1 McCoy, 467 ft. from N and W lines, J. M. Seaton Sur., S.D. 6,019 ft., orders.

Jack County: Magnolia 1 Borden, 1,000 ft. from N and 500 ft. from W lines, W. R. Smith Sur., A-547, Ellenburger test, drilling 6,952 ft.

Parker & Farris 1 Lewis, 467 ft. from S and W lines of E 80 acres, Blk. 2, Navarro C.S.L. Sur., A-443, S.D. 3,355 ft., repairs.

O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines, H. C. Ayers Sur., A-4, testing, T.D. 6,031 ft.

Montague County: Youngblood, Foree & Stogner 1 C. D. Meador, 467 ft. from SE and SW lines, J. B. Miller Sur., A-461, S.D. 6,010 ft., orders.

Throckmorton County: Fain-McGaha and Bridwell Oil Co. 1 T. G. Hendrix, 330 ft. from N and W lines, SE¼ Sec. 104, J. Mathews Sur., A-936, drilling 1,800 ft.

Humble 2 A. McKnight, 2,420 ft. from N and 660 ft. from E lines, Sec. 2, D.E.&C. Sur., A-1264, 4,500-ft. rotary test, waiting on cement, T.D. 4,060 ft.

Wilbarger County: Ross Roberts 1 L. Webb, 1,780 ft. from S and 468 ft. from W lines, Sec. 8, H.&T.C. Sur., Blk. 5, 2,450 ft., rotary test, drilling 2,402 ft.

Wise County: Hunt Oil Co .1 W. H. Halman, 700 ft. from N of road and 1,100 ft. from W of railroad in G. W. Cash Sur., A-166, 6,000-ft. rotary test, drilling 4,123 ft.

Young County: Kerlyn Oil and Phillips 1 E. C. Garvey, 947 ft. from N and 2,353 ft. from E lines, Sec. 4, O.B.&N. Sur., A-19, 5,700-ft. rotary test, preparing to reperf., T.D. 5,436 ft.

Haskell County Sand Pool Showing in Early Tests

FORT WORTH, Tex., Dec. 15.—The opening of a new sand pool in Haskell County may result from testing operations now under way at Ed C. Lawson 1 C. C. Rose, J. M. Cass Survey. Drilled to 3,002 ft., 1 Rose was plugged back to 2,801 ft. after a lower test, from 2,827-35 ft., obtained oil and water.

Casing was perforated from 2,663-85 ft. opposite a sand section. At last report, 1 Rose was swabbing and cleaning out, showing an estimated 100 bbl. of oil daily with no water. The wildcat is about 7 miles east of the town of Haskell.

Three Wildcat Locations Staked

Rig was being moved in at the end of the week by J. C. Hunter for 1 Anderson, Coleman County wildcat, located in the C NE SW Section 8, Lunatic Asylum Land Survey, 3 miles southeast of Abilene. No. 1 Anderson is contracted to 3,500 ft. and is in an area where a number of small wells are still on production. The wildcat is about ½ mile east of Lake Kirby. About 3 years ago Forest Development Co. drilled a deep test in the area which showed some oil from the Palo Pinto lime.

Location for a Taylor County test, 2½ miles west of Merkel, has been announced by C. W. and W. L. Snoddy. The wildcat will be 1 L. S. Tipton, staked 330 ft. from the south and east lines of a 400-acre lease in Section 20, Block 18, T.&P. Survey. No. 1 Tipton will be drilled to 3,000 ft.

In Callahan County, J. R. Hart will drill a shallow test at 1 Essie Walker. Location for the wildcat is 150 ft. from the east and 600 ft. from the south lines of an 80-acre lease in Section 42, D.&D.A. Survey. No. 1 Walker is about 1 mile southeast of the town of Admiral.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Fisher County: P. R. Long 1 J. P. Maberry, A. A. Spring Sur., dry at 3,289 ft.

Shell 1 J. H. Vaughan, Sec. 205, H.&T.C. Sur., Blk. 3, dry at 6,821 ft., top Ellenburger 6,799 ft.

Shackelford County: L. L. Rector 1 G. H. Grimes, Sec. 75, T.&P. Sur., Blk. 12, dry at 6,505 ft., top Ellenburger 5,450 ft.

Stephens County: T. S. Schroeder 1 T. M. Corbett, Sec. 12, S.P. Sur., Blk. 3, 17 bbl. in 24 hr., 160-qt. shot and 5,000 gal. acid 3,775-3,810 ft., T.D. 4,721 ft.

Fields

Akard, Jones County: Hedrick Oil Co. 5 Dorothy Akard, Gaudalupe Martinez Sur. 137, dry at 3,163 ft.

Brown, Brown County: Janellen Oil Co. 2 Davis, J. Bird Sur. 102, 842,000 cu. ft. gas, 1,000 gal. acid 1,190-1,257 ft.

WEST CENTRAL TEXAS ACTIVE WILDCATS

Brown County: H. P. Evans 1 Starkley, SE SE Sec. 3, H. C. Walker Sur., S.D. 1,240 ft., orders.

Callahan County: W. B. Schooler 1 Betcher, 330 ft. from N and W lines, Sec. 7, Blk. 6, S.P. Sur., 2,500-ft. cable-tool test, drilling 1,700 ft.

Coleman County: R. M. Coleman 1 E. E. Kingsberry, 3,254 ft. from S and 3,305 ft. from E lines, Wharton C.S.L. Survey, 2,300-ft. cable-tool test, drilling 1,174 ft.

Anderson-Prichard Oil Corp. 1 Bettie J. Mathews, 467 ft. from N and W lines, Lot 2, Hiran Kegian Sur. 520, drilling 3,250 ft.

Ellis & Estes 1 I. N. Bridges, 467 ft. from S and E lines of Bridges land in E.T. Sur. 107, 3,500-ft. cable-tool test, S.D. for casing, T.D. 1,781 ft.

A. P. Heinze 1 Whittington, NW SE Sec. 4, Blk. 2, T.&N.O. Sur., 3,800-ft. test, drilling 1,725 ft.

Comanche County: C. D. Lane 1 W. T. Hazzard, 3,889 ft. from NW and 1,860 ft. from NE lines, Marnaduke Hutton Sur., A-424, 2,900-ft. cable-tool test, drilling 1,865 ft.

Eastland County: Stewart Oil 1 Schaeffer, 660 ft. from E and 1,980 ft. from S lines, 394-ac. farm in Moses Allen Sur. 26, 3,500-ft. test, drilling 3,215 ft.

Miles & Francisco 1 J. P. Mitcham, 450 ft. from S and 750 ft. from W lines, Sec. 3175, T.E.&L. Sur., 700-ft. cable-tool test, S.D. 647 ft., orders.

Hamilton County: Grady Wallace 1 J. H. Robertson, 4,750 ft. from NE and 6,400 ft. from SE lines, J. Chew Sur., A-164, 4,000-ft. cable-tool test, drilling 3,270 ft.

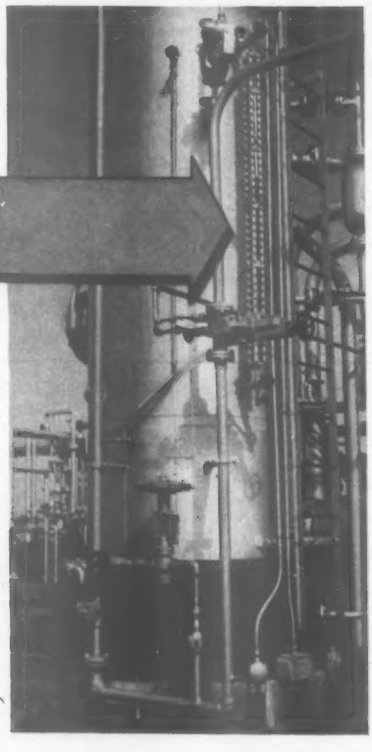
Haskell County: Edward C. Lawson 1 C. C. Rose, 489 ft. from S and 440 ft. from E lines, 392-ac. tract, J. McCass Sur. 57, A-95, 3,000-ft. test, swabbing, T.D. 2,985 ft.

Jones County: Butler & Horne Drilling Co. 1 G. W. Murfee, 660 ft. from N and W lines of SW cor. E. Dickinson Sur. 275, but in Jones Boston Sur. 276, drilling 1,075 ft.

Petroleum Producers Co. 1 G. Walker, 330 ft. from S and W lines, Sec. 46, T.&P. Sur., Blk. 16, S.D. 2,003 ft., orders.

T. J. Coyne 1 L. E. Clayburn, NW cor. tract in Lot

(Continued on Page 79)



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12-JV-3

Revival of Burbank Trend Play Seen in New Wildcat

By ROBERT INGRAM

MOST important of the Osage district oil pools are those along the Burbank sand trend, a shore line trap in the western part of Osage County which produces in the Burbank and South Burbank pools. These two pools account for 16,000 bbl. of the daily average 34,000 bbl. entire Osage production and outline a large section of the shore line which many operators believe extends both north and south for a considerable distance.

Search for extensions of this trend, however, has been sporadic, due in part to deliberate discouragement of development of Osage lands during the 1920's and in part to the normal difficulties of following any shore-line trend. The Burbank pool itself was not opened until 1920 although the Osage development was the first oil play in Oklahoma. South Burbank was not found until 1934.

Since 1934, exploration and development has been encouraged in the Osage under a direct reversal of policy on the part of the federal government which exercises considerable control through its administration of Indian affairs. Most of the new drilling, however, has been on highs outlined by a field party of the U. S. Geological Survey from 1934 to 1937 and has opened or extended relatively small producing structures.

Indications that the Burbank trend would again be an important objective of wildcatters in the Osage district, however, were seen last week when Skelly Oil Co. staked location for 1 Steve Hardisty, E½ SW SE 4-28-4e. It is located northwest of the Burbank pool and beyond the Mervine pool and, although in Kay County and not in Osage County, is classed as part of the Osage play, and is directly in line with a hypothetical trend of the Burbank shore line to the northwest.

Extension of the play into Osage County itself, both south and west of the Burbank pools, was evident at the Osage lease sale at Pawhuska where many of the 81 tracts offered were located in this area. The sale was the third in 1941 and marked the first time in many years that more than two sales have been held in any 12 months.

Of the total tracts sold, 57 were on the east side of the county, but these brought only $16,425. The remaining tracts along the trend went for higher prices and brought the total sale receipts to $39,675.

Old timers who attended the sale again remarked at the absence of spirited bidding which once hiked the price for a single tract to more than $1,000,000. Nonetheless there was more interest in the sale than had been shown for some time and many of the lessees were dissatisfied with the procedure of the sale and urged that in the future the Department of the Interior apply the sealed bid rule to the Osage in accordance with practices at other Indian agencies in the state.

Big Gasser Completed From Charlson Zone at Chickasha

Sinclair Prairie Oil Co. added another big gasser in the Charlson zone of the Chickasha field of Grady County when 7 Charlson gaged 150,000,000 cu. ft. a day. Located in SE SE 22-5n-8w, it had the Charlson zone at 2,860 ft., about 60 ft. higher than the highest well in the field, and drilled to 4,113 ft.; pipe was set on top of the gas.

The volume test was made with a spring gage. Shut-in pressure was 1,840 lb. An official potential will be made during the next week.

Mid-Continent Petroleum 1 Nick, NW NW 27-5n-8w, drilled to 6,500 ft. and was running casing; top of the Charlson zone had not been released, but the well was checking very low.

Seventh Big Producer Brought In at Apache

Texas Co. has completed the seventh producer in the new Apache field in Caddo County at 5 Smith, NE SW NW 2-5n-12w. It is the sixth well for Texaco and the fourth on the discovery lease.

Pay was topped at 3,373 ft., where pipe was set, and drilled to 3,490 ft., total depth. The first hour the well flowed 247.38 bbl. of oil through casing, then was pinched through a 1-in. choke on tubing to do 113 to 114 bbl. of oil an hour. It has been pinched to the field allowable of 300 bbl. daily. Kerr-Lynn & Co. had the drilling contract.

Texaco 2 Mulkahay, NE NW SE 2-5n-12w, on southeast flank of the field, was coring at 3,643 ft., believed to be top of the pay; it is checking lower than any well in the field, but no water has been encountered yet.

Two Apache Trend Tests Under Way

Denver Producing & Refining was drilling ahead below 3,075 ft. after a drill-stem test at 1 Luella Hayes, wildcat in NE NE SW 14-4n-11w, northwest of Elgin in Comanche County. On drill-stem test at 3,000-75 ft., the well showed 360 ft. of mud, no oil, gas or water; an oil-stained sand was had at 3,000-30 ft.

Texas Co. was spudding at the 1 Reich, in NW NW NE 25-4n-11w, also in the Elgin area; contract for 4,000 ft. was awarded Olson Drilling Co.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	23	17,669	74,341
Wildcats	2	344	7,682
Gas wells: Fields	1	*0.25	5,268
Dry holes: Fields	16	.....	32,219
Wildcats	6	.....	26,979
Total	48	.....	146,489
Repressure wells	1	.....	1,717
Recompletions	5	840	.....

* Million cu. ft.

OKLAHOMA COMPLETIONS

Wildcats

Comanche County: Texas 1 Gamble, SW NE SE 5-3-10w, dry, T.D. 6,276 ft., Mississippi Caney 5,893 ft.

Texas 1 School Land-B, SW SW 13-4-11w, dry, T.D. 5,233 ft., Mississippi Caney 4,352 ft.

Creek County: Anderson-Prichard 1 Wood, NE NE SW 18-15-7, dry, T.D. 4,213 ft., Wilcox 4,138 ft.

Deep Rock 1 Meadors, SE NW NE 16-15-7, flowed 134 bbl. through tubing, 40.5 gravity, Wilcox 3,951 ft., 7-in. 3,928 ft., T.D. 3,985 ft., *discovery.*

Hughes County: Barnsdall 1 Skinner, SE SW NW 11-9-10, dry, T.D. 3,694 ft., Hunton 3,687 ft.

McClain County: Patsy Oil 4 Caldwell, SE NE SE 16-5-3, flowed 210 bbl. in 3 hr., 38.2 gravity, Viola 3,550 ft., 7-in. 3,530 ft., T.D. 3,697 ft., *discovery of west extension to Byars pool.*

Payne County: Eason Oil 1 Gobbel, SE NW NE 8-17-1, dry, T.D. 5,278 ft., Wilcox 5,168 ft.

Pontotoc County: Glenn S. Norville 1 Fleet, SE SE SE 14-5-6, dry, T.D. 2,285 ft., Pennsylvania Caney 2,125 ft.

Fields

Apache, Caddo County: Texas 1 Mulkeshay, SW NW SE 2-5-12w, flowed 14,256 bbl. oil and 6,000,000 cu. ft. gas through casing with 3-in. outlet, bromide 3,195 ft., pay sand 3,372 ft., 7-in. 3,372 ft., T.D. 3,492 ft.

North Bebee, Pottawatomie County: Champlin 1 Billington, SE SE SE 8-5-5, pumped 50 bbl., Hunton 2,211 ft., 7-in. 2,212 ft., acid, T.D. 2,470 ft.

Champlin 1 Burton, SW SE NE 9-5-5, pumped 150 bbl. oil and 40 bbl. water, Hunton 2,350 ft., 7-in. 2,349 ft., acid, T.D. 2,620 ft.

Champlin 1 Sharp, SE SW NW 9-5-5, pumped 160 bbl. oil and 25 bbl. water, Hunton 2,289 ft., 7-in. 2,290 ft., acid, T.D. 2,503 ft.

Farmers Mutual 1 Walker, NW SE SE 9-5-5, pumped 145 bbl., Hunton 2,262 ft., 7-in. 2,278 ft., acid, T.D. 2,560 ft.

West Davenport, Lincoln County: Oklahoma Oil 1 Richie, NW SE NE 32-15-5, dry, T.D. 3,602 ft., Prue 3,592 ft.

South Earlsboro, Seminole County: Thompson 2 Anderson, SE SW NE 22-9-5, flowed 204 bbl., Earlsboro 3,446 ft., 7-in. 3,444 ft., shot, T.D. 3,472 ft.

Amerada 6 Edwards, NW SE NE 22-9-5, flowed 291 bbl., Earlsboro, 3,435 ft., 7-in. 3,435 ft., shot, T.D. 3,467 ft.

West Earlsboro, Pottawatomie County: Tide Water 2 Perry, NW NW 19-9-5, flowed 223 bbl., Hunton 4,066-4,100 ft., 5½-in. 4,066 ft., acid, T.D. 4,103 ft.

Ed Cox, Carter County: Elliott 2 Wolfe, SW NE SE 22-2s-2w, pumped 15 bbl., pay 1,030-1,115 ft., 7-in. 1,030 ft., T.D. 1,134 ft.

Empire, Stephens County: Cities Service 20 Suber, NE SE SW 33-1s-8w, old well, old T.D. 1,680 ft., 8-in. 1,648 ft., pay 2,216-48 ft., T.D. 2,349 ft., pumped 232 bbl.

Magnolia 5 Bowles-Dillard, NE NW NE 2-2s-5w, pumped 12 bbl., shot 693-700 ft., T.D. 700 ft.

Mudge Oil 10 Broadbent, NE SW NW 1-2s-5w, old well, T.D. 828 ft., dry.

Mudge Oil 15 Broadbent, SE NW NW 1-2s-5w, pumped 6 bbl., pay 688-743 ft., T.D. 745 ft.

Magnolia 33 Dillard, SE SE NE 2-2s-5w, dry, T.D. 708 ft.

West Francis, Pontotoc County: Glen Norville et al 1 Bryne, SW NW 25-5-6, dry, T.D. 2,149 ft.

Guthrie, Logan County: Sunray 1 McLeod-A, SE NE SE 12-17-2w, flowed 473 bbl., Bartlesville 5,116-35 ft., 7-in. 5,116 ft., T.D. 5,135 ft.

Hobart, Kiowa County: W. C. McBride 1 Watkins, NW NE NW 29-7-17w, dry, T.D. 1,356 ft., Simpson 1,303 ft.

Hotulke, Pottawatomie County: Sun 2 Kessinger, NW NE SW 25-9-4, flowed 186 bbl. through ½-in. choke, Hunton 4,100-24 ft., 5-in. 4,339 ft., T.D. 4,342 ft.

West Hotulke, Pottawatomie County: Sinclair 1 Boyd, SE NW SE 21-9-4, pumped 25 bbl., Hunton 4,338-51½ ft., 7-in. 4,550 ft., acid, T.D. 4,551 ft.

Smith 1 Billington, SE SE SE 22-9-4, old well, old T.D. 4,445 ft., T.D. 4,541 ft., P.B. 4,260 ft., Hunton 4,167 ft., perf. 4,163-81 ft., pumped 75 bbl. oil and 80 bbl. water.

Lovell, Logan County: Sinclair Prairie 1 Kendricks SW NW SE 21-18-4w, old well, old T.D. 4,993 ft., T.D. 6,075 ft., dolomite 6,013 ft., acid, flowed 533 bbl. in 19 hr.

Oklahoma City, Oklahoma County: Mid-Continent 4 Smith, NE SE NW 15-11-3w, pumped 70 bbl. oil and 70 bbl. water, Wilcox 6,396-6,500 ft., 8-in. 6,387 ft., T.D. 6,530 ft.

Phillips 1 Dunham, NW NE NW 34-12-3w, pumped 307 bbl. oil and 130 bbl. water, Wilcox 6,451 ft., 8⅝-in. 6,432 ft., T.D. 6,560 ft.

Perkins, Lincoln County: Portable Drilling 1 Teeter-A, NW NE SW 24-17-2, flowed 120 bbl. oil and 3,500,000 cu. ft. gas through ⅝-in. choke, Hunton 4,495 ft., 5-in. 4,495 ft., 4,497 ft.

Rusk, Okfuskee County: Margay 2 Long, NW NW SE 7-11-8, flowed 525 bbl., Cromwell 3,681 ft., 7-in. 3,681 ft., T.D. 3,703 ft.

Seay, Jefferson County: Yingling-Lauck 33 Seay, SE SW NE 3-7s-5w, pumped 70 bbl., pay 1,254 ft., 7-in. 1,254 ft., shot, T.D. 1,274 ft.

East Tecumseh, Pottawatomie County: Atlantic 3 Lee, NW SW SE 16-9-4, pumped 198 bbl., second Wilcox 4,835-38 ft., 5-in. 4,850 ft., T.D. 4,850 ft., *opens new pay zone.*

Crosbie and Atlantic 6 School Land, NW NE SE 16-9-4, dry, T.D. 4,822 ft., Wilcox 4,686 ft.

Velma, Stephens County: Skelly 1 Frensley, NW NW NW 36-1s-5w, pumped 25 bbl., 7-in. 765 ft., shot 783-813 ft., T.D. 860 ft.

AVERAGE DAILY PRODUCTION

LEADING OKLAHOMA FIELDS

	Dec. 13	Dec. 6
Allen	4,050	4,000
Apache	2,550	2,500
Billings	6,250	6,275
Burbank	8,525	8,400
South Burbank	7,750	7,650
Balance Osage	18,075	17,850
Blackwell district	3,350	3,350
Bristow-Slick	6,400	6,350
Cement	13,650	13,800
Coyle	3,975	3,900
Crescent	1,500	1,425
East Cromwell	5,100	5,050
Cromwell	2,750	2,725
Cumberland	8,000	9,300
Cushing-Shamrock	8,950	8,900
Dill	2,350	2,375
Duncan	3,550	3,500
Edmond	3,450	3,400
Fish	3,725	3,600
Fitts	10,050	10,000
Jesse	1,975	1,950
Graham-Fox	2,100	2,050
Guthrie	3,600	3,550
Healdton	8,450	8,400
Hewitt	13,350	13,750
Keokuk	2,925	2,800
Konawa	950	950
Lucien	5,400	5,375
Moore	875	850
Northeastern counties	17,450	17,200
Oklahoma City	72,150	80,000
Olympic	1,625	1,500
Ramsey	4,675	4,650
Sasakwa	1,050	1,050
Sholem-Alechem	2,425	2,400
Stroud, East	1,450	1,500
Seminole district:		
Bowlegs	5,650	5,500
Carr City	2,100	2,100
Dora	1,125	1,075
Earlsboro	3,450	3,375
East Earlsboro	1,550	1,600
South Earlsboro	650	675
Little River	6,050	5,975
East Little River	625	650
Mission	1,175	1,150
Seminole	6,025	6,000
East Seminole	800	775
Searight	1,675	1,700
Total Seminole	30,875	30,575
St. Louis-Pearson	16,350	15,750
Tatums-Tussy	5,000	5,050
Wewoka	1,725	1,750
Yale-Jennings	3,350	3,300
Total Oklahoma	415,975	418,250

Miscellaneous

Kay County: Burks Development 1 Weige, SE NW 28-27-1w, dry, T.D. 896 ft.

(Continued on Page 78)

Permian Lime Pay Is Opened South of Sand Hills Field

By TOM BARBER

MIDLAND, Tex., Dec. 15.—Permian lime production from the Tubb horizon has been indicated in the Ordovician area south of Crane County's Sand Hills field. The prospective discovery is Shell 1 Barnsley, a south offset to Gulf 1-B Tubb, the discovery well in the area.

No. 1 Barnsley first found a show of oil at 3,853-3,920 ft., where a drill-stem test recovered 150 ft. of mud and water and 90 ft. of sulfur water. Bleeding cores were taken from 2,135-53 ft. and from 4,170-88 ft., as operator drilled ahead. On a 30-minute drill-stem test from 4,082-4,163 ft., 1 Barnsley recovered 135 ft. of drilling fluid with gas volume testing 870,000 cu. ft. A third drill-stem test, the first in the Tubb horizon, returned 2,170 ft. of fluid, 2,100 ft. of which was oil, from 4,164-4,226 ft. Gas volume tested 196,000 cu. ft. daily.

At the end of the week, the test was coring ahead after recovering 15 ft. of bleeding lime with scattered porosity from a core taken at 4,188-4,206 ft. Location is 493 ft. out of the NE cor. of Section 30, Block B-27, P.S.L. Survey.

Meanwhile, additional acreage north of the northeastern part of the Sand Hills pool has been proven for production by Gulf 33 Waddell, Section 20, Block B-26, P.S.L. Survey. No. 33 Waddell, previously reported as indicating an extension, was completed last week for 6,044.40 bbl. of 35.7-gravity oil daily to extend the pool ½ mile north.

Previously, operator had treated the test with 5,000 gal. of acid at total depth of 4,631 ft. On official test, the well flowed 1,496 bbl. in 6 hours to rate the large potential. The well is ½ mile north of the same firm's 26 Waddell, recently completed for 1,379 bbl. of oil daily, which, at the time of its completion, extended the pool ½ mile north.

Oil Show Logged by Ector County Wildcat

Operator at Oil Well Drilling Co. 1 J. L. Johnson, Ector County wildcat, 3 miles southeast of the Goldsmith field and 4 miles north of the Harper pool, was busy last week testing oil shows encountered during drilling. Early in the week, operator ran a 45-minute drill-stem test from 4,180-4,272 ft. but recovered only 30 ft. of drilling mud. A core was then taken from 4,253-72 ft. with a full recovery of hard lime bleeding in spots. No. 1 Johnson drilled lime from 4,272-4,376 ft., cored again from 4,376-95 ft. and recovered 13 ft. of lime with streaks of porosity and bleeding oil.

At the end of the week, however, the test was shut down for orders after recovering 186 ft. of drilling fluid with a slight show of oil on a 45-minute drill-stem test from 4,357-96 ft. Total depth is 4,510 ft. No. 1 Johnson is located 467 ft. out of the NW cor. of Section 48, Block 44, Township 1s, T.&P. Survey.

More Oil Found as Gulf-Wentz 2 Millar Drills Deeper

Pecos County's newest discovery, Gulf and Wentz 2 Millar, Section 43, Block 11, H.&G.N. Survey, found additional shows of oil and gas during the week as it drilled deeper. No. 2 Millar had indicated previously that it would make a small producer at 4,363 ft., where operator had treated the test with 5,000 gal. of acid. At the beginning of testing at that depth, production had been estimated at 75 bbl. of oil daily, but the volume gradually declined to an estimated 25 bbl. daily, so operator decided to deepen.

No. 2 Millar cored from 4,363 ft. to 4,383 ft. and set packer at 4,365 ft. With tool open 1 hour and 45 minutes, the test recovered 3,573 ft. of fluid, 60 ft. of which was mud and the rest 35-gravity oil. Gas volume was 35,000 cu. ft. daily. Tubing was run and mud displaced with water, but the test failed to flow. At last report, operator was considering a second acid treatment for the test. No. 2 Millar is believed to be in the Ellenburger, Lower Ordovician, lime.

Magnolia to Test Ordovician In Pecos County

In the general area where Gulf and Wentz are attempting to complete an Ellenburger lime discovery, Magnolia has announced location for 1 Ella Price, scheduled Ordovician wildcat. The test is in the SE of the N½ of Section 4, Block 11, H.&G.N. Survey. This location places 1 Price on the Pecos River, about 2 miles east of Grivin and about 7 miles northeast of Gulf and Wentz 2 Millar.

SUMMARY OF COMPLETIONS

Northern West Texas

	No.	Bbl.	Footage
Oil wells: Emma	12	11,472	60,279
Slaughter	4	1,453	20,592
Wasson	1	1,160	4,271
Dry holes: Wildcats	2	.....	8,662
Total	19	.....	93,804

Southern West Texas

	No.	Bbl.	Footage
Oil wells: Abell	3	1,515	14,436
Foster	2	1,385	8,695
Keystone (Colby sand)	2	586	6,640
Toborg	2	225	834
Other fields	8	6,125	35,850
Gas wells: Noelke	1	*59.76	1,175
Dry holes: Taylor-Link	3	.....	5,083
Other fields	2	.....	6,767
Wildcats	3	.....	13,698
Total	26	.....	92,178

Texas Panhandle

	No.	Bbl.	Footage
Oil wells: Fields	22	4,489	67,421
Gas wells: Fields	1	*0.7	3,125
Dry holes: Fields	3	.....	12,242
Total	26	.....	82,788

Southeast New Mexico

	No.	Bbl.	Footage
Oil wells: Fields	2	312	8,541
Dry holes: Wildcats	1	.....	1,966
Total	3	.....	10,507

* Million cu. ft.

Culberson County Test Staked

A new shallow wildcat for Culberson County has been staked by S. P. Williams. The test will be on the J. O. Borfield land and will be drilled 330 ft. from the north line and 1,980 ft. from the east line of Section 20, Block 8, P.S.L. Survey.

SOUTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Wildcats

Glasscock County: E. M. Wahlenmaier 1 Texas Ld. & Tr., elev. 2,664 ft., dry at 3,565 ft., top lime 2,570 ft.

Val Verde County: John Cockburn 1 I. E. Ingram, G.C.&S.F. Sur., Sec. 42, Blk. LLL, 1,980 ft. from N and 330 ft. from W lines of section, dry at 1,688 ft.

Winkler County: Magnolia 20 State-Walton, elev. 2,934 ft., dry at 8,445 ft.

Fields

Abell, Pecos County: G. T. Abell 1 Alexander-State, elev. 2,375 ft., 22 bbl., ¼-in. choke, 11,000 gal. acid 3,764-3,854 ft., T.D. 4,015 ft.

Magnolia 1 Baldwin-State, elev. 2,392 ft., 8,100,000 cu. ft. gas, pay 5,690-96 ft., old well drilled deeper.

Magnolia 4 Silverman-State, elev. 2,395 ft., 1,427 bbl., ½-in. choke, top Simpson 4,835 ft., top Tulip Creek 5,070 ft., top McKee sand 5,381 ft., pay 5,419-27 ft.

Magnolia 1-B Myrick-State, elev. 2,377 ft., 66 bbl., ½-in. choke, pay 2,250-2,320 ft., T.D. 3,994 ft.

Big Lake, Regan County: Big Lake Oil Co. 18-C University, elev. 2,670 ft., 77 bbl., top Ellenburger 8,205 ft., pay 8,275-8,301 ft.

Foster, Ector County: Cities Service 4-B Bagley, elev. 2,969 ft., 242 bbl., ½-in. choke, 300-qt. shot 4,175-4,285 ft.

Sunray Oil Co. 3 Bagley, elev. 2,937 ft., 1,143 bbl., 370-qt. shot 4,311-4,407 ft., T.D. 4,410 ft.

Goldsmith, Ector County: Gulf 378 Goldsmith, elev. 3,204 ft., 1,694 bbl., 4,000 gal. acid 4,202-72 ft.

Harper, Ector County: Forest Dev. Co. 1-K Paul Moss, elev. 2,952 ft., dry at 4,500 ft.

Sinclair 27-B Johnson, elev. 2,991 ft., 1,209 bbl., 350-qt. shot 4,185-4,335 ft., T.D. 4,380 ft.

Johnson, Ector County: Continental 9 Johnson, elev. 2,967 ft., 238 bbl., pumping, 310-qt. shot 4,171-4,266 ft.

Jordan, Crane County: Texas 8-D University, elev. 2,809 ft., 2,139 bbl., pay 3,540-65 ft.

Keystone (Colby sand), Winkler County: Ralph Lowe 1 Minnie Cross, elev. 2,882 ft., 260 bbl., 250-qt. shot 3,244-33 ft., T.D. 3,320 ft.

Peck & Croft 2 Campbell, elev. 2,884 ft., 326 bbl. 27/64-in. choke, 430-qt. shot 3,181-3,310 ft., T.D. 3,320 ft.

McElroy, Crane County: Gulf 64 McElroy, elev. 2,559 ft., 207 bbl., pumping, 810-qt. shot 2,750-2,966 ft., T.D. 2,976 ft., old well drilled deeper.

McCamey, Upton County: Texas Pacific Coal & Oil 37-A Lane, elev. 2,628 ft., 111 bbl., pumping, 2,000 gal. acid 2,180-87 ft., T.D. 2,190 ft., old well drilled deeper.

Noelke, Crockett County: Bolsa Chica Oil Co. 1-29 Bouscaren, elev. 2,529 ft., 59,760,000 cu. ft. gas, pay 1,150-75 ft.

North Cowden, Ector County: Stanolind 26-G Smith, elev. 3,051 ft., 428 bbl., pumping, 450-qt. shot 4,185-4,335 ft., T.D. 4,380 ft.

Pecos Valley, Pecos County: W. H. Waldrop 1 Scharff & Blackman, elev. 2,432 ft., dry at 2,267 ft.

Sand Hills (Permian), Crane County: Magnolia 5 Lea, elev. 2,638 ft., 292 bbl., ½-in. choke, 9,500 gal. acid 4,345-4,710 ft.

Taylor-Link, Pecos County: Sam Letwin 4-E University, elev. 2,521 ft., dry at 1,685 ft.

Petroleum Drilling Co. 1 University, elev. 2,543 ft., dry at 1,682 ft.

Milton Unger 2-A University-Shell, elev. 2,553 ft., dry at 1,716 ft.

Tobarg, Pecos County: Stanolind 25-B Tippett, elev. 2,318 ft., 28 bbl. oil and 17 bbl. water, pumping, pay 324-62 ft.

Tide Water 2-T Smith, elev. 2,387 ft., 197 bbl. oil and 10 per cent water, pumping, pay 470-72 ft.

Walker, Pecos County: Cardinal 3-K White & Baker, elev. 2,997 ft., 49 bbl., 100-qt. shot 1,950-76 ft.

SOUTHERN WEST TEXAS ACTIVE WILDCATS

Crockett County: Amerada 1-G Todd estate, G.C.&S.F. Sur., Sec. 15, Blk. WX, 660 ft. from S and E lines, Ordovician test, drilling 3,500 ft.

Humble 1 J. W. Owens, SW SE Sec. 8, Blk. GG, H.E.&W.T. Sur., swabbing, T.D. 2,003 ft.

Culberson County: S. P. Williams 1 J. O. Barfield, Sec. 20, P.S.L. Sur., Blk. 82, 330 ft. from N and 1,980 ft. from E lines of section, 1,500-ft. test, first report.

Jacobs & Gibson 1 University, Sec. 5, Blk. 29, University Sur., 990 ft. from S and E lines, drilling 850 ft.

J. S. Pittman 1 Bouscaren, 467 ft. from N and W lines, Sec. 29, Blk. HH, H.E.&W.T. Sur., 2,500-ft. test, drilling 2,200 ft.

Ector County: Oil Well Drilling Co. 1 J. L. Johnson, T.&P. Sur., Blk. 14, Sec. 48, Twp. 1s, 467 ft. from N and W lines, 4,500-ft. test, drilling 4,356 ft.

Glasscock County: E. M. Wahlenmaier 1 Texas Ld. & Tr., 467 ft. from W and S lines, Sec. 15, Blk. 34, T.&P. Sur., drilling 3,547 ft.

Pecos County: Cardinal Oil 1-3 University, 1,715 ft. from N and 2,370 ft. from W lines, Sec. 3, Blk. 17, University Sur., S.D. 1,588 ft., waiting orders after P.B. from 1,604 ft.

J. L. Cooper 1 University, 330 ft. from S and E lines, Sec. 13, Blk. 16, University Sur., drilling 1,485 ft.

Gulf 2 Millar, NW SE Sec. 43, Blk. 11, H.&G.N. Sur., Ordovician test, cleaning out, testing, T.D. 4,383 ft.

James & Pollard 1 University, 1,980 ft. from W and S lines, Sec. 34, Blk. 27, University Sur., 3,000-ft. test, spudded in and S.D.

Reagan County: Amerada 1-RB University, 660 ft. from N and W lines of NE¼ Sec. 8, Blk. 48, University Sur., drilling 9,159 ft.

Amerada 1-RC University, 660 ft. from S and E lines NE¼ Sec. 4, Blk. 48, University Sur., S.D. 2,420 ft. after P.B. from 2,790 ft.

Sutton County: S. B. Roberts 1 George Allison, NW NE Sec. 44, Blk. K, G.H.&S.A. Sur., straightening hole 760 ft.

Upton County: Plymouth 1 Alford, Sec. 50, Blk. 12, P. B. Scott Sur., running 7-in. casing, T.D. 10,194 ft.

Ward County: Shell 1 Sealy-Smith, 2,310 ft. from S and 330 ft. from E lines, Sec. 38, Blk. A, G.M.M. B.&A. Sur., Ordovician test, drilling 7,847 ft.

Winkler County: Union Oil 1 W. C. Driver, Sec. 19, Blk. B-6, P.S.L. Sur., 660 ft. from N and W lines of section, drilling 3,070 ft.

Northern West Texas Strike Still Testing

A new oil-producing area for the northern West Texas district is still under consideration at Amerada 1 Ruth Hudson, Gaines County wildcat, 3 miles west of the south end of the Wasson field. No. 1 Hudson was previously reported testing a 22-ft. section which had shown porosity and staining. The section was treated with 5,000 gal. of acid and swabbed, recovering 261 bbl. of oil. This is 33 bbl. in excess of the oil load used in acidizing. The oil tested 29.4 gravity.

After bailing dry, the test made 1.01 bbl. of fluid per hour, 56 per cent acid water but the amount of acid water was declining. At the first of the month, 1 Hudson was shot with 96 qt. of nitroglycerin from 4,952-5,000 ft. As the week ended, preparations were being made to deepen the test below 5,000 ft. It was originally contracted to 7,000 ft. Location is in the NW NW Section 60, Block AX, T.&P. Survey.

Operators Active in Hockley County

The location of a new wildcat, the extension of the

Slaughter pool and the report that a drilling wildcat may be drilled deeper marked Hockley County as the district's most active area. In an apparent move to give the Slaughter field a major extension, Tide Water Associated Oil Co. announced the location of a wildcat 3 miles northeast of production.

The test will be drilled as 1 Commerce Trust Co., 440 ft. from the north and east lines of Labor 19, League 31, Baylor C.S.L. Survey. There are no failures between the project and the Slaughter pool, which extends into northwestern Terry and southeastern Cochran counties. No. 1 Commerce Trust Co. will be drilled to 5,200 ft. unless commercial production is obtained at a shallower depth.

In the meantime, the extreme northwest end of the Slaughter pool was given a ¼-mile west extension with the completion of Anderson-Prichard 19 F. L. Woodley. On official gage the well rated a daily potential of 1,017 bbl. from a total depth of 5,000 ft. Location is in Labor 5, League 57, Oldham Survey.

Unconfirmed reports at the end of the week indicates that Anderson-Prichard and American Drilling Corp. 1 Ellwood estate may be deepened below present contract depth of 5,500 ft. No. 1 Ellwood is now drilling at 5,486 ft. with no shows reported.

Operators, reportedly, plan to deepen to the Clear Fork lime, from which production is derived in several West Texas areas. To test the Clear Fork would require drilling several hundred feet below present depth. No. 1 Ellwood is located 8 miles northeast of Levelland in Section 15, Block A, R. M. Thompson Survey.

Deep Wildcat Staked in Andrews County

An 8,500-ft. rotary wildcat test has been staked 4 miles west of the Emma pool of south central Andrews County by Phillips as 1-A University-Andrews in the SW SE Section 30, Block 10, University Lands Survey.

The test will be about 1 mile due west of Phillips 1 University-Andrews which encountered sulfur last June in the Ellenburger, Lower Ordovician, lime. No. 1 University-Andrews was drilled to 8,368 ft. and the logging of the Ellenburger lime at that level is considered to indicate a pronounced Ordovician high in the area.

NORTHERN WEST TEXAS COMPLETIONS

(24-hour rating based on last 3 hours of 6-hour gage)

Wildcats

Bailey County: Broderick & Calvert 1 G. H. Hayward, elev. 3,923 ft., dry at 5,602 ft.

Borden County: M. L. Richards 1 W. R. Drum, elev. 2,459 ft., dry at 3,060 ft.

Fields

Emma, Andrews County: Montecito 1 Cowden, elev. 3,165 ft., 1,160 bbl., 1-in. choke, pay 4,200-71 ft.

Post, Garza County: S. Caprite 2 W. Sullivan, elev. 2,498 ft., 15 bbl. oil and 10 bbl. water, pumping, 160-qt. shot 2,825-65 ft., T.D. 2,900 ft., old well drilled deeper.

Slaughter, Cochran County: Atlantic 31 Boyd, elev. 3,666 ft., 1,227 bbl., 2-in. casing outlet, 10,000 gal. acid 4,970-5,065 ft.

Honolulu 14-18 Igoe & Smith, elev. 3,640 ft., 1,019 bbl., 2-in. casing outlet, 10,000 gal. acid 4,985-5,025 ft.

Honolulu 15-13 Igoe & Smith, elev. 3,648 ft., 984 bbl., 2-in. casing outlet, 10,000 gal. acid 4,975-5,030 ft.

Slaughter, Hockley County: Honolulu 10-A Mallett, elev. 3,640 ft., 1,191 bbl., 2-in. casing outlet, 10,000 gal. acid 5,030-70 ft.

Magnolia 10-D Mallett, elev. 3,589 ft., 1,516 bbl., 3-in. casing outlet, 10,500 gal. acid 4,920-90 ft.

Magnolia 15-J Maliett, elev. 3,627 ft., 1,189 bbl., 3-in. casing outlet, 10,500 gal. acid 4,983-5,047 ft.

Magnolia 18-J Mallett, elev. 3,614 ft., 1,291 bbl., 3-in. casing outlet, 10,500 gal. acid 4,955-5,031 ft.

Stanolind 26-B Slaughter, elev. 3,542 ft., 279 bbl. oil and 3.6 per cent water, pumping, 9,500 gal. acid 4,895-5,006 ft., T.D. 5,016 ft.

Stanolind 31-B Slaughter, elev. 3,534 ft., 268 bbl. oil and 6.8 per cent water, pumping, 2,000 gal. acid and 80-qt. shot 4,975-5,007 ft., T.D. 5,037 ft.

Texas 66 Slaughter, elev. 3,541 ft., 1,366 bbl., 12,000 gal. acid 4,960-5,015 ft.

Texas Pacific Coal & Oil 4 Lauhoff, elev. 3,563 ft., 720 bbl., 3-in. casing outlet, 10,000 gal. acid 4,960-98 ft.

Uscan Drilling Co. 1 Booker, elev. 3,581 ft., 422 bbl., 1-in. choke, 10,000 gal. acid 4,900-55 ft.

Wasson, Yoakum County: American Liberty 5 Futch, elev. 3,646 ft., 535 bbl. oil and 3 per cent water. ½-in. choke, 10,000 gal. acid 5,025-5,216 ft.

American Liberty 16 Keller, elev. 3,631 ft., 272 bbl. oil and 20 per cent water, 5,000 gal. acid 5,000-5,166 ft.

Drilling & Exploration Co. 3-A Hudson, elev. 3,643 ft., 287 bbl., ½-in. choke, 8,000 gal. acid 4,850-5,110 ft.

Drilling & Exploration Co. 3-B Hudson, elev. 3,657 ft., 359 bbl., ½-in. choke, 8,000 gal. acid 4,895-5,100 ft.

NORTHERN WEST TEXAS ACTIVE WILDCATS

Andrews County: Furhman 1 M. A. Thornberry, 330 ft. from W and S lines, Sec. 23, Blk. A-42, P.S.L. Sur., 4,600-ft. test, waiting on cement, T.D. 224 ft.

Fullerton Oil 1 Wilson, NE SW SE Sec. 15, Blk. A-32, P.S.L. Sur., Ordovician test, fishing pipe T.D. 5,515 ft.

(Continued on Page 76)

SOUTHWEST TEXAS

Extension Well at Washburn Finds Thick Wilcox Sand

By F. L. SINGLETON

CORPUS CHRISTI, Tex., Dec. 15—In the southwest extension area of the Washburn field, La Salle County, Quintana Petroleum Co. was preparing to complete its second producer following a favorite drill-stem test in 2-B Washburn, 500 ft. north of production. Total depth of the well was 5,559 ft. with 5½-in. casing cemented at 5,539 ft. Sand showing oil was cored in the Wilcox formation at 5,498-5,559 ft., and casing was cemented for testing following a 29-minute drill-stem test at 5,539-59 ft. The test recovered 4,140 ft. of pipe line oil and 450 ft. of oily mud.

SUMMARY OF COMPLETIONS

Lower Gulf Coast District

	No.	Bbl.	Footage
Oil wells: Fields	12	1,927	71,012
Dry holes: Wildcats	1	.....	5,850
Total	13	.....	76,862

Laredo District

	No.	Bbl.	Footage
Oil wells: Fields	10	1,205	29,967
Dry holes: Fields	2	.....	6,862
Wildcats	1	.....	910
Total	13	.....	37,739

South Central Texas District

	No.	Bbl.	Footage
Oil wells: Fields	6	6	2,890
Gas wells: Fields	1	.....	2,983
Wildcats	3	.....	9,060
Total	7	.....	14,933

While the completion of the well as a producer in itself will not mark up any major extension, it confirms the presence of a thick sand section in the Wilcox and this may be expected to extend production over considerable area. While there is little chance of any outside drilling by other companies due to the huge block on which field is located, development is being watched with wide interest inasmuch as this type of production is something new for the district, and exploration along the trend may be governed by future development. Additional rigs are being moved in, and drilling is scheduled to be started on the company's 1 Naylor and Jones, a wildcat located about 2 miles north of the field in Section 104, Survey 65.

Wilcox Test Near Kenedy Townsite Draws Attention

Phillips Petroleum Co. 1 V. D. Strunk, a Wilcox test located in the C. Martinez Survey, 3½ miles southwest of the town of Kenedy, Karnes County, was being watched as sand and shale with gas and distillate odor was logged at intervals from 6,095-6398 ft. At a total depth of 6,578 ft., the hole was found to be off vertical, and it has been plugged back, sidetracked and the well is drilling ahead in shale below 6,480 ft. while geological markers are not available, the showings are believed to be in the upper Carrizo-Wilcox formation, and the prospects of production are considered encouraging at the present time.

New Well Completed at West Tuleta

In the West Tuleta field, Bee County, Dirks Brothers and Henderson Coquat 1 R. Harris is being completed for a gas-distillate producer although no gage was available. With 5½-in. casing cemented on bottom at 7,626 ft., perforations were made opposite sand at 7,505-16 ft., and the well is flowing gas, distillate and mud through a ¼-in. choke while cleaning out. Tubing pressure was 2,650 lb. Production is believed to be from the Carrizo or the base of the Mount Selman from which production was opened in the area several months ago by Mills Bennett Production Co.

Wildcat Showing at Live Oak

In the Corpus Christi area, and located on the Live Oak Peninsula prospect, Aransas County, Humble 1 Kent & Crane, reported showings of oil and gas, and is coring sand below 7,452 ft. Sandy shale with a gas odor was logged from 7,444-47 ft., while sand with an oil and gas odor was cored at 7,447-52 ft. These showings are believed to be in the top of the Frio formation, although the top of the section has not been released.

Distillate Strike Near Henshaw Likely

The Jim Wells County sector of the Frio-Vicksburg trend, had promise of a gas-distillate field, by the showing of H. R. Smith 1 S. W. Weldon, a wildcat located 1½ miles northeast of the Henshaw field in the Casa Blanca grant. Gas sand was cored at intervals from 5,089-5,104 ft., and a 3-minute drill-stem test at 5,102-11 ft., tested 350 lb. working pressure and recovered gas cut mud, and 1 pint of amber colored distillate.

The well is located on a farmout lease from Tide Water Associated Oil Co., and is scheduled to be drilled to a depth of 5,500 ft. It is situated 6,250 ft. northeast of the discovery well, completed in sand at 5,139-44 ft. Development in the area has been limited and it is possible the well may be an extension to the Henshaw field.

New Trend Pool-Opener Completed

Another gas-distillate field was recorded for the trend with the completion of Sun 1 A. C. Jones, a wildcat located in the Agua Nueva de Abajo grant, southern Jim Hogg County. With the well bottom at 6.009 ft., production was obtained by perforating casing at 4,230-35 ft., and the well flowed 1,000,500 cu. ft. gas through a 5/32-in. choke, with tubing and casing pressure equalized at 1,500 lb.

Geographically, the well is situated west of the Kelsey field, and northwest of the Sun field, and it's discovery apparently adds another prospective oil pool for this particular trend as future development can be expected to open oil production from down dip sands flanking the top of the structure.

Sun Field Outpost Logs More Sands

Sun 1-C Montalvo, 1½ miles north of the Sun field, Starr County, continues to log additional sands in the Frio-Vicksburg. The latest showing was from 5,787-93 ft., where a 7-minute drill-stem test recovered 30 ft. of 45-gravity oil, and tested 535 lb. working pressure. Water sand believed to be the base of the section was cored from 5,803-5,940 ft., and casing is expected to be cemented following an electrical survey which was being run to the total depth of 6,087 ft. The best sand section logged, appears to be from 5,376-86 ft. where drill-stem testing recovered 1,950 ft. of oil.

Completion Near for Yturria Field Well

To the south, and located in the new Yturria field, Sun 2-A Chapotal Land Co., is being prepared for a production test following a drill-stem test at 4,227-38 ft. which recovered 540 ft. of oil, 2 ft. of salt water and tested 260 lb. working pressure. Gas sand was cored at 4,218-24 ft., and oil sand from 4,224-42 ft., the total depth where 5½-in. casing was cemented. The sand section was topped about normal with the three completed wells.

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT

Wildcat

Jim Wells County: Bridwell 1 J. P. Blake, dry, T.D. 5,850 ft.

Fields

Agua Dulce, Nueces County: Lockhart 1 Luling Foundation, 80 bbl. distillate ad 90,000,000 cu. ft. of gas. Casing cemented at 7,055 ft. producing from open hole, T.D. 7,100 ft.

Richardson 3 Knight, 236 bbl., ⅛-in. choke, perf. casing 7,070-86 ft., T.D. 7,097 ft.

Richardson 7 McCoy, 150 bbl., 5/32-in. choke, perf. casing 6,481-96 ft., T.D. 6,998 ft.

East Placedo, Victoria County: W. L. Goldston 1 West, 202 bbl., ⅛-in. choke, perf. casing 6,868-70 ft., T.D. 6,920 ft.

Luby, Nueces County: Stanolind 38 Spessard, 139 bbl., ⅛-in. choke, perf. casing 5,173-76 ft., T.D. 5,178 ft.

Midway, San Patricio County: Henshaw Brothers 1 T.&N.O.R.R., 71 bbl. fluid, 40 per cent salt water 7/64-in. choke, perf. casing 5,315-18 ft., T.O. 5,345 ft.

Minnie Bock, Nueces County: E. A. Graham, 49 bbl.,

(Continued on Page 79)

EASTERN TEXAS FIELDS

Widespread Exploration Is Resumed After Slump

By D. H. STORMONT

DALLAS, Tex., Dec. 15.—Activity in the East Texas district returned to normal this week after a slump period the week previous. Four new wildcats were staked, two new wildcats, previous reported, were beginning drilling operations and one prospect was preparing to test. Large blocks were leased in Walker, Houston, and Henderson counties.

In the latter county, in the area recently opened by British American Oil Producing Co. 1 Young, Stanolind Oil & Gas Co. announced location for a test to be drilled as a joint operation with Darby Petroleum Co. and John R. Black. The test will be 1 W. J. Spurlock, located 467 ft. out of the southeast corner of a 469-acre lease in the Joseph Rice Survey, a west offset to 1 Young. Both the starting date and the location of the test are tentative, depending upon the outcome of geophysical work in the area.

The new pool, which has been named the Tri-Cities pool in honor of Athens, Malakoff and Cross Roads, was opened last month by 1 Young, which flowed 355 bbl. of oil and 31 bbl. of water in 24 hours through casing perforations at 7,608-41 ft. opposite a section of the Rodessa series in the Glen Rose lime. Final production followed 3 months of continuous testing of four separate sections.

Large Blocks Taken in Henderson, Houston, and Walker Counties

In the northeastern part of Henderson County, in the Brownsboro area, one of the largest blocks ever assembled in the county was reported. The block, centering around the J. M. Farmer Survey, 5 miles south of Brownsboro, is said to contain 10,000 acres and to be comprised of 70 different tracts. The acreage was assembled by an Athens operator, presumably for a major company. A drilling obligation, calling for a test to be started not later than March 1, 1942, is contained in the contract.

An option taken by Continental Oil Co. on 140,000 acres in Houston and Walker counties along the south end of the East Texas district will undoubtedly result in additional Wilcox exploration. The 12 months' shooting option with selection privileges was taken from Thompson Brothers Lumber Co., Houston County Timber Co. and Trinity Lumber Co. Most of the acreage is in the eastern part of Houston County and extends over an area 20 miles wide and 40 miles long.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: East Texas field	2	110	7,194
Cayuga	1	171	4,017
Hawkins	7	750	33,732
Dry holes: Wildcats	3		13,418
Total	13		58,361

Houston County Wildcat Prepares to Test Wilcox Sand

First pay test for Culmore & Gillespie 1 Lundy, Forbes Survey, 1½ miles southeast of Lovelady in Houston County, was scheduled for the first of the week. The test is bottomed at 5,016 ft. and operator has set 5½-in. casing at 3,295 ft. Squeeze jobs were run above and below a section of the Wilcox sand at 3,212-24 ft. An electrical survey reportedly indicated pay possibilities in this section.

Wood County Test Reported Structurally High

Operators in the Hawkins area of Wood County were awaiting the outcome of drilling at J. C. Moore 1 Green, Candler Survey, 8 miles northwest of the Hawkins field. The wildcat first drew attention when it logged the Austin chalk at 4,330 ft. With an elevation of 492 ft., 1 Green was reported 368 ft. higher structurally than a failure several miles northeast, drilled by Fred Strang, and also 522 ft. higher than the Ryan & McGlothlin-Gant failure several miles south.

No. 1 Green is now drilling below 4,900 ft. in the Eagleford shale. The base of the Austin was called at 4,500 ft., giving the test a normal section compared with the two failures. The Ryan-McGlothlin failure logged approximately 500 ft. of Eagleford and so far 1 Green has cut about 400 ft. of the shale.

Four Wildcats Staked

Four new wildcat locations were announced for the East Texas district during the week. Derrick is being moved in for the immediate starting of C. W. Killough 1 P. D. Ball, 1 mile northeast of Turlington in Freestone County. Exact footage has been reported as 300 ft. out of the easterly southwest corner of a 1,632-acre tract in the Manuel Rionda Survey. No. 1 Ball will be drilled on a block of 3,600 acres to a depth of 5,500 ft. unless production is obtained at a shallower depth.

In Anderson County, Navarro Oil Co. will drill 1 Davey & Royall, 4 miles northwest of Jarvis. The test is located on a block comprised of 1,500 acres and is 467 ft. out of the northwest corner of a 44-acre lease in the C. Rucker Survey.

A Woodbine sand test for eastern Cherokee County has been staked by T. G. Shaw as 1 J. A. Bounds. Location is 750 ft. from the east and 875 ft. from the north lines of a 124-acre tract in the W. H. Walters Survey.

Red River County was given another wildcat test this week with the location of J. W. Shelor 1 A. J. McGuire, Alfred Allen Survey, 3 miles north of Detroit. Exact footage for the wildcat has not been announced. No. 1 McGuire is expected to test the Pettit or the Travis Peak of the basal Trinity formation.

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EAST TEXAS COMPLETIONS

Wildcats

Raines County: Tex Harvey 1 R. R. Hall, Bebe Johnson Sur., dry at 4,852 ft.

Upshur County: Placid Oil Co. 1 L. C. McCain, M. N. Minor Sur., 2 mi. SE of Lafayette, dry at 4,462 ft.

Van Zandt County: Robert Lake 1 Ike Allred, John Blair Sur., 4½ mi. N of Wills Point, dry at 4,104 ft., top Austin 2,575 ft., top Woodbine 3,605 ft.

East Texas Field

(1-hour gage)

Longview, Gregg County: C. H. Lyons and M. V. Rudman 4 W. E. Bolten, William Robinson Sur., 40 bbl., top Austin 3,468 ft., pay 3,515-18 ft., T.D. 3,545 ft.

Longview, Rusk County: Hunt Oil Co. 34-D D. M. Bradford, J. Ximines Sur., 70 bbl., top Austin 3,410 ft., pay 3,550-65 ft., T.D. 3,649 ft.

Other Fields

Cayuga, Anderson County: Carter-Gragg 8 C. W. McMahon, J. C. Collins Sur., 171 bbl. in 24 hr., ⅛-in. choke, T.D. 4,017 ft.

Hawkins, Wood County: Humble 3 J. P. Crisman, J. Pollock Sur., 93 bbl. in 6 hr., ¼-in. choke, top Austin 4,380 ft., top Woodbine 4,645 ft., pay 4,645-4,755 ft., T.D. 4,841 ft.

Humble 1 M. and R. Howard, E. Wideman Sur., 109 bbl. in 24 hr., ¼-in. choke, top Austin 4,333 ft., top Woodbine 4,785 ft., pay 4,768-85 ft., T.D. 4,839 ft.

Humble 2 S. Jeffrey, G. Brewer Sur., 112 bbl. in 6 hr., ¼-in. choke, top Austin 4,090 ft., top Woodbine 4,366 ft., pay 4,497-4,657 ft., T.D. 4,858 ft.

Humble 2 Joe Palmer, E. Wideman Sur., 108 bbl. in 6 hr., ¼-in. choke, top Austin 4,268 ft., top Woodbine 4,646 ft., pay 4,670-4,700 ft., T.D. 4,850 ft.

Humble 2 Amanda, J. Pollock Sur., 104 bbl. in 6 hr., ¼-in. choke, top Austin 4,423 ft., top Woodbine 4,596 ft., pay 4,728-58 ft., T.D. 4,887 ft.

Humble 3 B. A. Wells, G. Brewer Sur., 112 bbl. in 6 hr., ¼-in. choke, top Austin 3,885 ft., top Woodbine 4,056 ft., pay 4,500-4,605 ft.

Humble 2 C. C. Miller, J. P. Moseley Sur., 112 bbl. in 6 hr., ¼-in. choke, top Austin 4,216 ft., top Woodbine 4,428 ft., pay 4,544-4,760 ft., T.D. 4,852 ft.

EAST TEXAS ACTIVE WILDCATS

Camp County: Talco Asphalt Ref. Co. 1 McKenzie, L. William Sur., ¾ mi. W of Pittsburg field, pulling tubing out to 8,014 ft., preparing to perforate.

Freestone County: O. B. Perot 1 Coleman, H. Howard Sur., 2½ mi. SW of Streetman, swabbing, T.D. 3,463 ft.

Hopkins County: W. B. Hinton and Talco Asphalt Ref.

Co. 1 S. M. Long, 4,000 ft. from E and 650 ft. from S lines, W. Acquier Sur., rigging up pump, T.D. 4,895 ft.

Houston County: C. P. Culmore 1 G. T. Lundy, John Forbes Sur., 1½ mi. SE of Lovelady, 467 ft. from SE cor. of NE 40 acres of 310-acre tract, waiting on cement, T.D. 5,016 ft.

Hunt County: J. B. and Ed V. Parsons 1 O. P. Marshall, D. Ausmus Sur., E of Commerce, 475 ft. from N and 112 ft. from W lines of 100-acre tract, drilling 4,615 ft.

Leon County: Placid Oil Co. 1 J. S. Weekly, C. C. Stealy Sur., 3½ mi. NW of Jewett, 1,786 ft. from N and 467 ft. from W lines of survey, 310-acre tract, drilling 3,312 ft.

Limestone County: Zephyr Oil Co. 1 Barron, 337 ft. from NW and 300 ft. from SW lines, E. Mabry Sur., drilling 5,071 ft.

Nacogdoches County: B. D. K. Oil Co. 1 R. W. Wilson J. I. Y'Barbo Sur., 9,000 ft. from E and N lines of survey, drilling 1,850 ft.

Navarro County: L. T. Davis 1 W. R. Stevenson, T. J. Jourdan Sur., 330 ft. from N and 999 ft. from W lines of 120-acre tract, drilling 3,045 ft.

Smith County: Ryan Consolidated 1 D. S. Wright, J. M. Garcia Sur., 10 mi. SE of Mineola, 1,680 ft. from N and W lines of Edgar Pollett Sur., drilling 3,050 ft.

Louisiana Gulf Coast

(Continued from Page 62)

LOUISIANA GULF COAST COMPLETIONS

Fields

Anse La Butte. St. Martin Parish: Glassell & Glassell 1 Moresi. 211 bbl., 9/64-in. choke, perf. casing 6,085-6,100 ft., T.D. 6,228 ft.

Stanolind 6 Bergeron, 168 bbl., 9/64-in. choke, perf. casing 4,610-60 ft., T.D. 4,720 ft.

Stanolind 1-B Bergeron, 148 bbl., 9/64-in. choke, perf. casing 6,064-6,114 ft., T.D. 6,338 ft.

Stanolind 1 Guidry, drv. T.D. 5,004 ft.

Bayou Sale, St. Mary Parish: Humble 1 Wooster, 617 bbl., ¼-in. choke, perf. casing 10,119-27 ft., T.D. 10,185 ft.

Caillou Island: Texas 72 State, dry, T.D. 8,101 ft.

East Hackberry, Cameron Parish: Stanolind 32 Gulf Land, 235 bbl., 5/32-in. choke, perf. casing 9,830-42 ft., T.D. 10,191 ft.

Edgerly, Calcasieu Parish: Gulf 2 Miller. T.D. 9,184 ft., abandoned due to mechanical trouble.

Erath, Vermilion Parish: Texas 2 Broussard, 335 bbl., 11/64-in. choke, perf. casing 8,700-45 ft., T.D. 11,641 ft.

Golden Meadows, La Fourche Parish: Texas 19 Falgout Holding, 222 bbl., ¼-in. choke, perf. casing 8,430-50 ft., T.D. 5,640 ft.

Grand Bay, Plaquemines Parish: Texas 2 State, 211 bbl., ¼-in. choke, perf. casing 8,415-25 ft., T.D. 10,053 ft.

Jefferson Island, Iberia Parish: Texas 8 Jefferson Island, 235 bbl., ¼-in. choke, T.D. 8,237 ft., P.B. T.D. 8,132 ft.

Jennings, Acadia Parish: Jolly 2 McFarlain, 161 bbl., 8/64-in. choke, T.D. 7,183 ft., P.B. T.D. 7,086 ft.

North Crowley, Acadia Parish: Humble 7 Reiners, 398 bbl., ¼-in. choke, perf. casing 8,804-07 ft., T.D. 9,060 ft.

Richie, Acadia Parish: W. N. Finnegan, dry, T.D. 3,517 ft.

Vincent & Welch 5 Hayes, 60 bbl., 10/64-in. choke, sand 3,498-3,508 ft.

Roanoke, Jefferson Davis Parish: Humble 1-B DeVilbiss. 205 bbl., ¼-in. choke, perf. casing 8,839-43 ft., T.D. 8,890 ft.

Ville Platte, Evangeline Parish: Texas 4 Norman, 108 bbl., 10/64-in. choke, T.D. 10,396 ft., P.B. T.D. 8,993 ft.

West Bay, Plaquemines Parish: Gulf 2 State, 33 bbl., 5/32-in. choke, perf. casing 7,374-87 ft., T.D. 7,401 ft.

Woodlawn, Jefferson Davis Parish: Union Sulphur 7 Miller, dry, T.D. 10,062 ft.

California Fields

(Continued from Page 60)

LOS ANGELES BASIN COMPLETIONS

Huntington Beach, Orange County: Marfar Oil Co. 1 Greer, 36-5s-11w, pumped 100 bbl., 15.1 gravity, 2 per cent cut, T.D. 4,236 ft., perf. 4,194-4,233 ft., completed in Pliocene oil sand.

Torrance, Los Angeles County: Bristol Oil Co. 1 Spring, 30-4s-13w, pumped 110 bbl., 17 gravity, 7 per cent cut, T.D. 3,732 ft., perf. 3,219-94 ft., 3,363-3,432 ft., 3,525-3,731 ft., completed in equivalent of Ranger zone.

Westport Oil Co. 7 W.P., 30-4s-13w, pumped 185 bbl., 17.8-gravity, 12 per cent cut, T.D. 3,761 ft., perf. 3,160-3,242 ft., 3,297-3,364 ft., 3,410-95 ft., 3,532-3,756 ft., completed in equivalent of Ranger zone.

Wilmington, Los Angeles County: Union Pacific R. R. 39 Edison, 3-5s-13w, flowed 720 bbl., 30.9 gravity, 0.7 per cent cut, 35,000 cu. ft. gas, 38/64-in. bean, pressures 295/325 lb., T.D. 4,055 ft., perf. 3,506-86 ft., 3,611-54 ft., 3,724-3,809 ft., 3,885-3,934 ft., 3,969-4,047 ft., completed in lower Terminal zone of Miocene age.

Union Pacific R. R. 211 fee, 3-5s-13w, flowed 517 bbl., 27.3-gravity, 0.3 per cent cut, 946,000 cu. ft. gas, 32/64-in. bean, pressures 500/1,000 lb., T.D. 3,465 ft., 60-mesh perf. 2,865-66 ft., 2,885-2,942 ft., 2,963-3,465 ft., completed in upper and lower Terminal zone of Miocene age.

Union Pacific R. R. 213 fee, 3-5s-13w, found 456 bbl., 31.4 gravity, 0.5 per cent cut, T.D. 2,750 ft., 60-mesh perf. 2,418-19 ft., 2,441-94 ft., 2,518-2,748 ft., completed in upper Terminal zone of Miocene age.

LOS ANGELES BASIN OUTPOSTS OR DEEP TESTS

Inglewood, Los Angeles County: Duquesne Oil Co. 2 Smith, 7-2s-14w, derrick.

Hogan Pet. 4-A Machado, 7-2s-14w, drilling in oil sand and shale 8,350 ft.

Jergins Oil Co. 3 Howard, 7-2s-14w, drilling 5,924 ft. in sand.

Standard 2-14 Vickers, 7-2s-14w, rigging up and preparing to spud.

Texas Co. 8 Smith, 7-2s-14w, T.D. 8,412 ft. in oil sand, top Nodular 7,840 ft., redrilled to 8,300 ft., elev. 242 ft.

Tide Water Associated 71 Vickers, 7-2s-14w, drilling 4,050 ft. in sandy shale.

Tide Water Associated 73 Vickers, 7-2s-14w, building rig.

Turnbull Canyon, Los Angeles County: Continental Oil Co. 2 Turnbull, 13-2s-11w, drilling in sand and shale 1,743 ft.

LOS ANGELES BASIN WILDCATS

Buena Park district, Orange County: Texas Co. 1 Spencer, 1-4s-11w, drilling in sand 7,202 ft.

Costa Mesa district, Orange County: Thompson, M. N., 1 Banning, 9-6s-10w, T.D. 5,645 ft., redrilling 4,330 ft., cleaning out sand bridges and fishing drill pipe.

Huntington Beach district, Orange County: La Bolsa Rancho Synd. 1 La Bolsa, 22-5s-11w, rigged up.

Palos Verdes district, Los Angeles County: Surety Holding Co. 1 Sepulveda, 22-5s-14w, drilling 1,164 ft. in sand.

Rio Hondo district, Los Angeles County: Potrero Oil Co. 1 Newman, 32-1s-11w, drilling 2,190 ft. in sand, circulating and waiting for casing, located 1 mile north of eastern tip of Montebello field, elev. 145 ft.

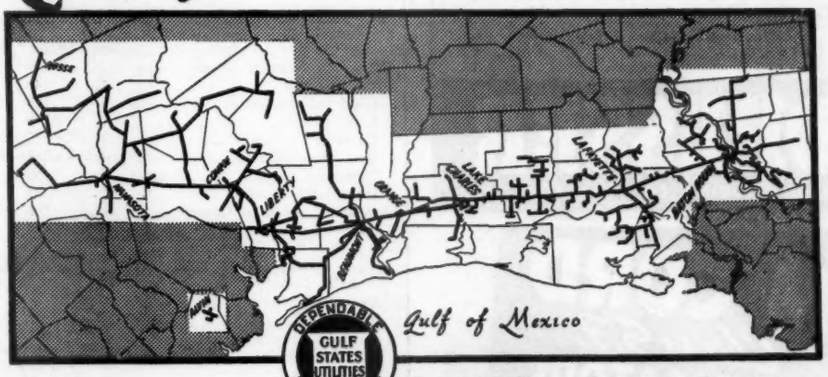
Santa Ana Canyon district, Orange County: Atlas Oil Co. 1 Santa Ana, 36-3s-9w, drilling in sand 872 ft.

Whittier district, Los Angeles County: Los Nietos Valley Oil Co. 1 Los Nietos, 29-2s-11w, rigged up.

Axis Pet. Co. 1 Tandberg, 13-2s-11w, rig.

Union 13 Sansinena, 30-2s-10w, drilling 3,584 ft. in sand and shale.

"SEASON'S GREETINGS"



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MICHIGAN OPERATIONS

Reed City Limited on Two Sides; South Still Open

By OTTO C. PRESSPRICH

SAGINAW, Mich., Dec. 15.—With the currently higher price on oil resulting in an all-time well head value and the extensive exploration for new fields continuing, drilling operations in Michigan last week resulted in 33 completions. There were 16 oil wells, 4 were gas wells and 13 were dry holes. New hopes and some disappointments were blended in the record while the Reed City field's rapid pace continued and was high lighted by the spectacular completion of a gusher which produced initially at the hourly rate of 600 bbl.

However, two dry holes limited the Reed City field, but another good well was added in the Roscommon County Headquarters field, a new section for development was opened in Tuscola County, and plans went forward to acid treat a Roscommon-Richfield Township test which gives promises of becoming still another source of production.

Figures released by the state Tax Commission placed the average well head value of Michigan's oil at $1.39 a bbl. in October. In October, 1940, the average was a bit over 97 cents. The Tax Commission's severance division said October crude and natural gas was valued at $2,745,367, based on runs of 1,845,300 bbl. of oil and 1,304,000,000 cu. ft. of natural gas. The tax totaled $54,907. Valuation of production from the Reed City field was in excess of $986,000, that area having produced 684,000 bbl. of oil and more than a quarter-million cu. ft. of gas. Clare County production rated section with a value of $441,000, Midland's third at $214,500.

● SUMMARY OF COMPLETIONS ●

	No.	Bbl.	Footage
Oil wells: Allegan County	2	285	2,955
Bay County	2	443	5,840
Gladwin County	1	120	3,534
Lake County	1	1,279	3,639
Osceola County	7	28,579	25,202
Roscommon County	1	1,056	3,250
Tuscola County	1	50	2,869
Van Buren County	1	25	1,291
Gas wells: Isabella County	1	*0.8	1,377
Osceola County	3	*33.4	3,689
Dry holes: Bay County	1	.....	4,343
Cass County	1	.....	1,080
Isabella County	1	.....	1,310
Mecosta County	1	.....	1,488
Midland County	1	.....	4,059
Osceola County	3	.....	11,281
Ottawa County	1	.....	2,011
Roscommon County	1	.....	3,408
Van Buren County	3	.....	4,412
Total	33	.....	87,138

* Million cu. ft.

While seven more oil wells, and three big gassers were completed, the hope of a major extension of the Reed City field in Lincoln Township. Osceola County, was ruined when the Gordon & Bolger 1 Sweet in Section 20 and the Cook & Voorhees 1 Kremmin in Section 8 were dry holes. However, on the field's southern edge there appears to be room for much development.

The 600 bbl. well is another Ohio Oil Co. success—the 2 Johnson in Section 30 where C. W. Teater's Baderschneider, nearing completion stage, will complete that section for drilling. Pure Oil Co. 2 Campbell in Section 19, with potential exceeding 7,000 bbl. a day, was the second best of the seven new wells in a field which now has approximately 100 producers, all still capable of producing considerably more than the allowable which now is down to 200 bbl. a day.

With the Dundee dry and the Traverse failing to show oil in commercial quantities, Sun Oil Co. meanwhile abandoned Richardson 1 wildcat in Section 15 of Osceola's Cedar Creek Township. Taggart Bros. Co. drilled the three Lincoln Township gassers, their potential being better than 33 million cubic feet.

New Area Indicated in Tuscola County

Pumping 50 bbl., after acid treatment, Smith Petroleum Co. 1 Partlo in Section 28, Akron Township, Tuscola County, indicated a new development area about three miles south and east of the older field. Smith Petroleum has started another well in Section 28, a half-mile west of the Partlo.

Two Producers Completed in Bay County

Other northeastern Michigan development was featured by completion of two producers in Bay County, Chapman Oil Co. 4 Rechsteiner in Section 2, Monitor, producing initially 367 bbl. a day, but settling to 25, and the C. W. Jones 1 Larcey in Section 27 Kawkawlin flowing 65 bbl. the first 18 hr. after acid. Ervin Major 1 McDonald wildcat was dry in Section 2, Gibson Township.

Five Wells at Roscommon in Final Stages

While McClanahan Oil Co. 1 Baumna in Richfield-Roscommon was flowing and pumping better than 30 bbl. a day before acid treatment. Ohio Oil Co. A-1 State in Section 13, Roscommon Township, came in for 1,056 bbl. a day in the Traverse and three other tests promised production. In Lake Township of Roscommon Sun Oil Co. 1 Hunt, Section 29, was dry.

Other Developments Scattered

The first completion in many weeks in the old Bentley-Gladwin area was recorded as Stork Oil Co. 5 Smart ,in Section 29, settled to 25 bbl. a day, after initial flow of 120 bbl. after acid in a day.

A production test was scheduled for an oil test on the Simon lease in Section 21 of Dallas Township, Clinton County. If successful it will be that county's first producer. J. B. Spitzley, Jr., reported a good show of Transverse oil around 2,480 ft.

A dry hole spoiled an attempt to extend the Winn gas field in Isabella County. New production last week in Michigan extended over eight counties while dry holes were listed in nine, including a Cass County wildcat.

There have been 978 drilling permits issued in Michigan this year, the Conservation Department reported in announcing 12 additional ones last week. Three are for Arenac County tests, two for Van Buren, one each for Clare, Bay, Isabella, Lake, Roscommon, Osceola, and Allegan.

MICHIGAN COMPLETIONS

Allegan County

Hopkins Township: Muskegon Development Co. 1 Puschel, NW NW SE 18-3n-12w, 229 bbl. in 20 hr., after acid, T.D. 1,597 ft.

Trowbridge Township: Burton & Butts 1 Waterman, NE SE SE 30-1n-13w, 10 bbl., acid, T.D. 1,358 ft.

Bay County

Gibson Township: Ervin Major 1 McDonald, SW SE SW 2-18n-3e, wildcat, dry after show of oil and gas, T.D. 4,343 ft.

Kawkawlin Township: C. W. Jones 1 Larcey, NE SE SE 27-15n-4e, 65 bbl. first 18 hr., acid, T.D. 2,940 ft.

Monitor Township: Chapman Oil Co. 4 Rechsteiner, NW NW SW 2-14n-4e, 367 bbl. settling to 25 bbl. a day, acid, T.D. 2,900 ft.

Cass County

Volinia Township: Alton C. Murray 1 Berkey, SW NW SE 1-5s-14w, wildcat, dry, T.D. 1,080 ft.

Gladwin County

Bentley Township: Stork Oil Co. 5 Smart, SW NE NW 29-17n-2e, 120 bbl., settling to 25 bbl. a day, acid, T.D. 3,534 ft.

Isabella County

Broowfield Township: Guy M. Obenauer 2 Lueder, SW NW SE 13-14n-6w, 768,000 cu. ft. natural gas, T.D. 1,377½ ft.

Fremont Township: Belvidere Oil Co. 1 Moor, SW NW NW 21-13n-5w, wildcat, dry, T.D. 1,310 ft.

Lake County

Pinora Township: Louis Rose 2 Pfuhl, C-S½ NE SE 25-18n-11w, 880 bbl. first 16½ hr., T.D. 3,639 ft.

Mecosta County

Grant Township: American Production Co. 1 Michigan Trust Co., SE NW SW 14-16n-9w, wildcat, dry, T.D. 1,488 ft.

Midland County

Edenville Township: Michigan Devonian Petroleum Co. 1 CoOrdinator, C-W½ SW SW 23-16n-1w, dry, T.D. 4,059 ft.

(Continued on Page 77)

War Speeds Attempt to Ease Public Lands Lease Policy

By T. R. INGRAM

DENVER, Colo., Dec. 15.—The reported appearance of Japanese planes over Pacific Coast cities following the bombing of Pearl Harbor had immediate and direct repercussions on oil development in the Rocky Mountain area. Independent oil operators in the area have been bringing strong pressure on Washington for some time to have the Department of the Interior establish a flat royalty rate of 12½ per cent on oil production from the public domain instead of the present sliding scale which has held up wildcatting on Government land under the leasing provisions of the 1935 amendment to the Oil Leasing Act.

Since the passing of the amendment to Section 17 virtually no prospecting has taken place on the public domain. One of the strongest arguments of those seeking the change has been that while the opening of new fields in the interior has been retarded by the Government's policy, the coastal states of California, Texas and Louisiana, which are highly vulnerable to destructive enemy attack, have built up two-thirds of the available daily oil production and three-fourths of the future reserves.

Last August the Senate public lands subcommittee, of which Sen. Joseph C. O'Mahoney, of Wyoming, is chairman, conducted hearings in Denver on this situation, and in response to a request of the committee, H. Leslie Parker, of Denver, contacted more than 100 responsible operators in the Rocky Mountain area on the terms of the proposed new form of lease. Their views were incorporated into a lease similar to the standard form except for changes necessary to make them applicable to federal lands, and this was submitted to the O'Mahoney subcommittee after it had been endorsed by the I.P.A.A. meeting in Tulsa.

Little progress was made, however, until the Japanese bombers gave a practical demonstration of the danger of concentration of reserves in coastal districts. Immediately Parker and associates took the matter up with Washington by telegram and replies have been received saying contact with the Department of the Interior has been made and that the matter is being given consideration.

Scouts Move In to "Sit On" Eastern Colorado Tests

Two important wildcats in eastern Colorado are reaching a critical stage and a number of scouts for the major companies have been sent into that area to look over the situation and watch developments. Stanolind's No. 1 Snell, in Kiowa County, 30 miles northwest of the Patterson pool in Kearney County, reached the Cimarron anhydrite at 2,212 ft. and local geologists calculate the elevation at 1,641 ft. on that formation as compared with 1,195 ft. on the Patterson discovery well. It is drilling at 4,785 ft. The O. E. Terry 1 Whitson at Kit Carson appears to be running only 32 ft. lower on the Dakota as compared with the Gulf well half-a-mile to the south. It already has had several strong shows of gas. (See drilling reports for tops.)

Moffat Field Test Completed In Upper Sundance

Texas Co. 13 Knowlton, Moffat field, Colorado, which gave promise of opening a deeper pay in the Sundance, proved to be only an average well in the upper Sundance. It was drilled through the Sundance formation into the red beds at 4,701 ft., and oil rose 4,420 ft. in 2 hours. Testing showed, however, that the oil was from the upper part of the sand. It was plugged back to 4,599 ft., and perforated at 4,486-4,589 ft. It swabbed 675 bbl., 20 per cent water, and, after some testing, it was listed as a completion for 241 bbl. of fluid, of which 173 bbl. was oil and the remainder water, on a pumping test.

The best completion for the week was Stanolind 11-X Parkinson, Iles field, Colorado, which flowed 198 bbl. in 3 hours through the 2-in., or at the rate of 1,584 bbl. in 24 hours.

Montana Work Mostly Routine

High Gravity Oil 3 Government, on the plateau above the rimrock of the Kevin-Sunburst field, made 270 bbl. first 24 hours, the oil being 37.3 gravity. It is an offset to 2 Horner, completed by the same company last June for 120 bbl., the latter being 1½ miles from the nearest producer on the west side of the field.

Cut Bank chalked up three dry holes in all of which the lower Cut Bank sand was missing. One of them, Indian Oil 2 fee, was an edge well on the west side. The other two indicated spotted conditions within the proven area.

SUMMARY OF COMPLETIONS

Colorado

	No.	Bbl.	Footage
Oil wells: Fields	2	1,757	8,059
Dry holes: Wildcats	1	.....	4,840
Total	3	.....	12,899

Wyoming

	No.	Bbl.	Footage
Oil wells: Fields	1	123	1,150

Montana

	No.	Bbl.	Footage
Oil wells: Fields	4	527	11,165
Dry holes: Fields	3	.....	9,021
Gas wells: Fields	1	.....	770
Total	8	.....	20,956

Northwest New Mexico

	No.	Bbl.	Footage
Oil wells: Fields	1	40	980
Gas wells: Fields	1	*1	1,805
Dry holes: Fields	1	.....	1,025
Total	3	.....	3,810

* Million cu. ft.

Lance Creek Outpost Continues Swab Tests

Cow Gulch Oil 1 Nelson, a wildcat on the southwest Lance Creek structure, is still swabbing to test at 5,100 ft. in the Sundance. While the quantity of oil coming in is increasing slowly and the gas pressure is somewhat heavier, its fate is still uncertain. Last test showed 12 to 15 bbl. of oil with water. Chemical analysis indicates that the drilling water has not yet been exhausted.

Northwest New Mexico Gas Area to Be Drilled

Southern Union Production Co. has been granted its Ute Indian lease on the Barker dome, San Juan County, New Mexico, for which it was high bidder, and has spudded in a test well in the NE NW 21-32n-14w, nearly a mile to the south and west of the 30,000,000-ft. gasser drilled by the Gulf Oil Corp. in 1929. The Gulf well was abandoned for lack of a market. Since then Southern Union has developed a market in Central New Mexico.

Colorado Wildcat Abandoned

Mutual Oil Co. 1 State, C SW SW 32-7n-51w, near Sterling, Colorado, is pulling casing to abandon at 4,840 ft. after failing to recover production in upper sands. A seismograph survey will be made preliminary to drilling another well. It had water in the Dakota. Best show was in sand at 4,480-96 ft.

COLORADO COMPLETIONS

Wildcat

Logan County: Mutual Oil 1 State, C SW SW 32-7n-51w, T.D. 4,840 ft., water in the Dakota, top 4,834 ft., show oil in Nio-Benton 4,480-96 ft., plugged and abandoned.

Fields

Iles, Moffat County: Stanolind 11-X Parkinson, near C NE SE 22-4n-92w, T.D. 3,358 ft., top Sundance 3,318 ft., dry to 3,348 ft., saturated 3,348-58 ft., flowed 198 bbl. in 2 hr. through open 2-in. tubing.

Moffat, Moffat County: Texas 13 Knowlton, NW NW NW 10-4n-91w, T.D. 4,701 ft., P.B. to 4,599 ft., perf. at 4,486-4,589 ft., pumped 241 bbl. fluid in 24 hr., 173 bbl. oil and 68 bbl. water. (See lead.)

COLORADO DRILLING REPORT

Archuleta County: Navajo Oil 1 Brooks, NE NE NW 2-32n-2e, drilling below 100 ft.

Cheyenne County: O. E. Terry 1 Elmer E. Whitson, NW NW SE 12-13s-49w, drilling 3,895 ft. broken lime and shale, tops Timpas 1,570 ft., Dakota 2,025 ft., Morrison 2,380 ft., Permian 2,830 ft., strong shows gas 3,653 and 3,820-36 ft.

Huerfano County: Rheyn & Tomkins 1 Two Pines, SE SE 31-28s-69w, T.D. 1,500 ft., waiting on casing.

Sideman-White 1-X Martinez, C SW NE 33-26s-67w, T.D. 2,631 ft., preparing to test.

Rheym & Tomkins 1 Two Pines, SE SE 31-28s-69w, drilling 1,196 ft. (cor.) in lime, 5 5/16-in. 820 ft.

S. W. Pressey 4 Alamo, NW NW NW 3-27s-68w, location, first report, Alamo district.

Kiowa County: Stanolind 1 Snell, C SW SW 7-20s-41w, drilling 4,785 ft.

La Plata County: Nick Spatter 1-X Bryce, C SW SW 31-33n-9w, drilling 4,525 ft. in sandy shale, showing considerable gas and trace of oil.

Las Animas County: Barney Oil 1 Dutto-Marchisio, NW NW 32-33s-62w, T.D. 1,610 ft., waiting on fishing tools.

Logan County: Mutual Oil 1 State, C SW SW 32-7n-51w, T.D. 4,840 ft., P.B. to sand at 4,480-96 ft., bailing and testing, probably will abandon.

Moffat County: Privett & Spangler 1 Stillings, NE SE SE 12-5n-96w, drilling 2,245 ft. in gray shale.

Great Divide Petroleum 1 Wyatt, NW NW SE 6-9n-92w, S.D. 2,002 ft., contract depth, will make new contract.

C. R. Privett 1 Sutton, NE NE SW 1-5n-96w, S.D. 2,318 ft. (correction).

A. L. Greer 1 Government, C SW NE 24-5n-94w, S.D. 1,912 ft., sand 1,775-1,904 ft., show gas in base, carrying 8⅝-in. 1,375 ft.

Rio Blanco County: Texas-California 8 Unit, NW SE NW 26-3n-9w, drilling 6,276 ft.

United Oil Producers 1 Hill, Lot 13, 6-1n-101w, S.D. 1,300 ft.

Desert Oil Co. 1 Rector, Lot 6, 35-2n-102w, drilling 500 ft. in shale.

United Producers 2 Hill, CEL Lot 13, 6-1n-101w, S.D. 700 ft.

Burford Oil Co. 1 Government, C SW SW 16-1n-91w, T.D. 4,527 ft., set tubing 4,338 ft., testing.

Routt County: Elk River Co. 1 Fred N. May, C SE SE 34-8n-86w, S.D. 450 ft.

WYOMING COMPLETION

Fields

La Barge, Sublette County: Texas 2-J Government, NE SW SW 27-27n-113w, T.D. 1,150 ft., top first Almy sand 872 ft., flowed 123 bbl. in 24 hr. through ¼-in. choke.

WYOMING DRILLING REPORT

Big Horn County: Ohio 3 Utah-Wyoming Consol., Lot 57, 33-56n-97w, location.

Carbon County: Continental Oil 1 Frank M. Johnson, SE SE SW 1-24n-88w, drilling 4,056 ft. in red beds, top 3,900 ft.

Sinclair-Wyoming 27-A Wertz, CSL NW SW 6-26n-89w, drilling 4,681 ft.

Sinclair-Wyoming 26-A Wertz, NW SE SE 1-26n-90w (Sweetwater County), drilling 6,018 ft. in Tensleep.

Sinclair-Wyoming 1 Mary Carter, NE SE SE 31-25n-88w, drilling 4,030 ft.

Glen Swartout 3 Union Pacific, NE NE SE 21-22n-78w, S.D. 1,034 ft. in shale.

Sinclair-Wyoming 25-A Wertz, NW SE SW 6-26n-89w, drilling 5,770 ft.

Sinclair-Wyoming 25-C East Ferris, SE SE NW 25-26n-87w, T.D 3,994 ft., redrilling 3,280 ft.

Superior Oil 1 Brimmer, CWL NW NE 32-27n-89w, drilling 540 ft. in shale, cemented 20-in. 196 ft.

Sinclair-Wyoming 3-A Mahoney, C NW NE 34-26n-88w, drilling 2,770 ft.

Ohio 3 Diamond Cattle, SW NE SE 27-20n-78w, spudded.

Converse County: Harry Free 1 Jeffreys, SW SW SW 26-32n-69w, drilling 1,050 ft.

Fremont County: Indian Oil 4 Tribal, SW NW NW 23-6n-2w, cemented 12½-in. at 56 ft.

Superior Oil Co. 1 Tribal, SW SE SW 15-3n-1w, drilling 2,772 ft. in shale, top Frontier 1,930 ft.

Continental 2 Shoshone Indian, SE NE SE 1-6n-3w, ready to spud.

Lincoln County: K. M. P., Inc., 1 State, NE NE NE 36-25½-115w, drilling 2,150 ft.

Natrona County: Casper Creek Oil 1 State, SW SW NW 36-36n-81w, T.D. 2,732 ft. in sand, top 2,717 ft.

K. S. Albert 1 Young, NE SE 25-32n-82w, T.D. 1,630 ft., cemented 5 5/16-in. 1,590 ft., show oil.

General Petroleum 3-21-G, NW SW NW 21-35n-77w, drilling 4,228 ft.

Niobrara County: J. L. Berggren 1 fee, SE NW 23-35n-63w, T.D. 2,761 ft., trying to shut off water.

Cow Gulch Oil 1 Nelson, C SE SW 19-35n-65w, T.D. 5,600 ft., testing in basal Sundance. (See lead.)

Park County: MacKinnie Oil & Drilling 1 Northern Pacific, CNL NW NW 5-57n-99w, drilling 2,504 ft.

Yale Petroleum 2-A Atherly, SW SW NW 33-51n-100w, coring 3,492 ft.

Yale Petroleum 3-A Frisby, NE SW NE 32-52n-100w, moving in material.

Continental 2 Northern Pacific-2, NW SW NE 23-58n-98w, T.D. 3,447 ft. in saturated sand, 7-in. 3,382 ft., waiting on pumping equipment.

Continental 5 Northern Pacific-1, NW SE SE 23-58n-98w, drilling 865 ft. sand and shale.

Kirk Oil Co. 1 W. R. Coe, NE NW SE 27-50n-102w, cemented 15½-in. 190 ft., S.D. on account weather.

Husky Refining 2 Stump, SE SW SW 21-53n-101w, drilling 1,200 ft., 13-in. 300 ft.

Kirk Oil 4 Government, NW SW SW 24-58n-98w, location, first report, Frannie field, contract to Manning & Martin, Inc.

Sweetwater County: Sinclair-Wyoming 8 Hughes, SW SW SW 2-26n-90w, T.D. 3,998 ft., P.B. to 3,850 ft. to straighten.

(Continued on Page 80)

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Among the Drilling

Tax Commissioner Will Permit the Deduction of Drilling Expense

OIL COMPANIES and individuals will be permitted to deduct drilling expenses in reporting income regardless of whether the item was incurred through operation of their own equipment or by contract on a per foot basis. This decision on policy of the Internal Revenue Bureau reverses a threatened interpretation of an opinion of the U. S. Board of Tax Appeals. Guy T. Helvering, commissioner of internal revenue, last week advised Sen. Tom Connally of Texas that he will adhere to his former ruling permitting the deduction.

Instructions to members of the Internal Revenue Bureau in the form of an interoffice memorandum earlier had indicated that the customary deductions of drilling expense incurred through engagement of contractors would be prohibited.

Under an opinion by the U. S. Board of Tax Appeals in the case of E. C. Laster from Texas it was held that drilling costs could be deducted as legitimate expenses only in case where the operator used his own drilling equipment and drilled his own wells.

Senator Connally took the position that many small operators could not afford to maintain their own drilling outfits and employed others with such equipment to drill their wells, and that under this policy the drilling of wells had developed into an important industry in Texas. It would be unfair, he maintained, to permit the large companies operating their own drilling equipment to deduct such expense, whereas the small operator who was forced to have his drilling done under contract, could not deduct such expense.

Senator Connally further pointed out that the commissioner should not change his rules for dealing with such drilling expenses until the courts had finally adjudicated the issue.

Mr. Helvering advised Senator Connally that if he could legally continue his old ruling in the face of the opinion by the Board of Tax Appeals, he would do so. The legal questions involved now are being investigated, but it seems certain that Mr. Helvering will not alter his method of handling such items of expense until the case is decided by the court of last resort.

Senator Connally told him that if legislation is needed to clarify this issue, it will be taken care of in the next tax bill, and that there should be no change in the status of such cases during the brief period before such legislation is enacted.

CRYDER Drilling Co., Shreveport, has been awarded contract for the drilling of a new wildcat test in De Soto Parish, North Louisiana. It is A. E. Roscoe, Marshall, Tex., and Carter Oil Co. 1 McGill, located in SE NE 1-10n-13w. It is east of the Logansport field and located between Benson and Pelican. It will be drilled with rotary but contract depth was not released.

GRACE & WOODS, Wichita Falls, Tex., have received contract from H. L. Hunt of Dallas, Tex., for a wildcat test in Clay County, 2 miles north of the Henderson field. Depth specified in the contract is 6,000 ft.

S. B. ROBERTS, drilling contractor and oil operator of Abilene, Tex., has been awarded contract and is preparing to spud the J. C. Hunter 1 Anderson, 3 miles southeast of Abilene in Taylor County, West Central Texas. The 3,500-ft. wildcat is scheduled to test the Palo Pinto lime. The test is near five shallow oil wells, with location being in C SE SW Section 8, L.A.L. Survey.

A. B. RILEY, drilling contractor of Kilgore, Tex., has received contract to drill a Wilcox level wildcat in Concordia Parish, Louisiana, for Roger Lacy, Longview independent operator. Definite location has not yet been decided upon, but it is a proposed 5,500-ft. rotary test.

ARROW Drilling Co., Houston, Tex., has two rotaries running in the Port Barre field, St. Landry Parish, Louisiana, for the Pan American Production Co., and the Texas Co., while one operation is reported in the Charenton field, St. Landry Parish, for the Fifteen Oil Co.

HARRY L. EDWARDS Drilling Co., Houston, Tex., has started operations in the active North La Ward field, Jackson County, Texas, for Harrison & Abercrombie Oil Co. Other rigs are running along the Texas Coast in the Fannett, Dickinson and St. Charles fields for W. P. Luse, Pan American Production Co., and the Continental Oil Co. while in Louisiana a string of 7⅝-in. casing was cemented as protection below 9,600 ft. in Cities Service Oil Co. 1 Lacassine, a prospective pool opener in the Thornwell area, Jefferson Davis Parish.

RED IRON Drilling Co., Shreveport, La., has received contract to drill True Cauble 1 General American Life Insurance Co., in Section 44-7n-6e, Concordia Parish, Louisiana.

LEE Drilling Co., Tulsa, has started digging pits and cellar for a ¾-mile extension test on the northwest edge of the Monument pool in Lea County, New Mexico. The test is being drilled for Skelly Oil Co., its 3 Monstate, with location in C NW NW 13-19s-36e.

PINROD Drilling Co., Dallas, Tex., has taken contract to drill H. L. Hunt 1 C. F. Coon in Section 39-7n-4e, La Salle Parish, Louisiana.

FALCON-SEABOARD Drilling Co., Houston, Tex., has moved a rotary to La Salle Parish, north Central Louisiana for Sinclair Prairie Oil Co., while two other rigs are engaged in the Gulf Coast area at the Ville Platte field, Evangeline Parish, Louisiana, for Gulf and in Hidalgo County, Texas, where a wildcat is being drilled for W. R. Davis Co. Inc.

GLENN H. McCARTHY, Houston, Tex., has opened what appears to be a major discovery for the Texas Gulf Coast district with the completion of his 1 Crawford, a wildcat in the Stowell area, western Jefferson County. Production was obtained by perforating casing at a Frio sand section below 8,800 ft., and the well is flowing at the rate of 25 bbl. of pipeline oil per hour while testing through a ¼-in. choke. In the Magnolia field, Montgomery County, Texas, the contractor's 1 Tucker is drilling below 3,600 ft., while in the Bailey's Prairie area, Brazoria County, Texas, drilling was being started on his 1 Munson.

DOUGHERTY & MARKEY, drilling contractors, have suspended drilling for a production test on a wildcat in NW NE NE, Section 21-7n-4w, Clinton County, Michigan, on which oil pay reportedly was logged between 2,481 ft. and 2,483 ft. The test is John B. Spitzley, Trustee's 1

Contractors

Simon. The drilling contractors are carrying an interest in the well.

CROSBY Drilling Co., Houston, Tex., recompleted the company's 1 Poole, the discovery of Wilcox-sand production in the Lissie area, Wharton County, Texas, and the well is showing an increase in production. It is flowing at the rate of 218 bbl. of 49.4° gravity oil daily through a 5/32-in. choke from sand at 9,600 ft.

PARKER Drilling Co. has transferred Cline McClanahan from Tulsa to Mount Pleasant, Mich., to superintend drilling operations on Continental Oil Co.'s deep test.

ROWAN Drilling Co., Houston, Tex., was preparing to cut side-wall cores in the company's joint test with Nichols Oil Co. 1 W. H. Land, a wildcat in Chambers County, Texas. An electrical survey is reported to have shown possible production in sand below 8,200 ft. Total depth is 8,400 ft.

ARROW Drilling Co., Odessa, Tex., has the contract to drill the Anderson-Prichard 1 H. E. Bowen test southwest of the Apco-Warner area. The footage of 1 H. E. Bowen is 660 ft. from the north corner of a 324-acre lease in Section 10, Block 10, in the H.& G.N. Survey. Location is 7 miles northwest of Baldridge, Pecos County, Texas.

W. B. OMOHUNDRO, drilling contractor and operator of Wichita Falls, Tex., has been given contract to drill a 7,500-ft. wildcat test for the Continental Oil Co. in Montague County, Texas. The test will be known as 1 Pearl Mueller and is located in the F. Hamilton Survey, 4 miles east of Bowie, and about 7 miles southeast of the Gant discovery well.

WISE, Jackson, Markham, and Snedden, contractors of Tyler, Tex., are moving in rig to drill Sinclair Prairie Oil Co. 1 Mullinix, a new Woodbine test in the Bolton Survey, 3 miles north of Maydelle in Cherokee County, Texas.

COMPLETE Oil Well Service Co. has been awarded the contract for a 5,000-ft. test to be drilled about 1½ miles west of the North Rincon field in eastern Starr County, Texas. The test is for V. F. Neuhaus, Mission independent operator, who has staked his 1 Simmons on an 1,800-acre block in Section 74.

NORBLA Drilling Co., Tulsa, is spudding in on a deep test in the center of 6-24-6, west of Fairfax, Okla., on a block owned by Carter Oil. Co. The new well is being drilled with the expectation that there might be a southwest extension from the Burbank field.

S. J. TAYLOR, Tyler, Tex., contractor, will drill 1 P. C. D. Ball, a wildcat test in Freestone County, Texas. The test is located 300 ft. out of the southwest corner of a 1,631-acre tract, Manuel Rionda Survey. The wildcat will drill for the Woodbine or 5,000 ft.

HOUSH & THOMPSON Drilling Co., Houston, Tex., is driving piling and moving in material to drill John H. Snowden 1 Simpson in the Caplen field, Galveston County, Texas.

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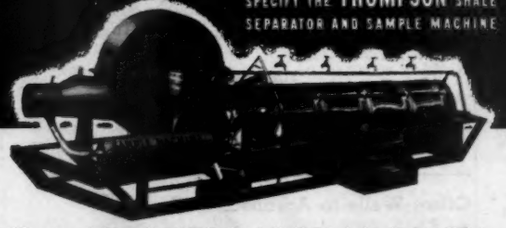

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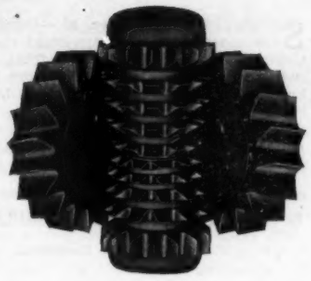

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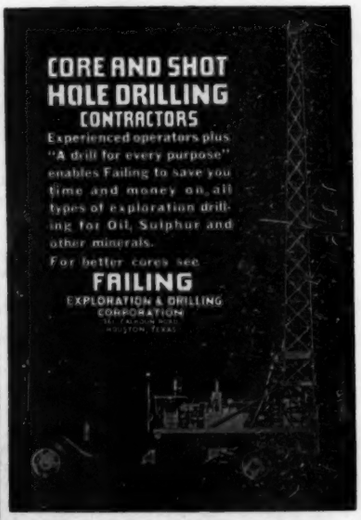

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HOUSTON, TEXAS

Nineteen Wildcats Drilling Along Wilcox Trend Area

By R. MARNE SANFORD

SHREVEPORT, La., Dec. 15.—During the past week there were three new wildcat tests staked in the Central Louisiana Wilcox area. This, coupled with the previous week's six wildcat locations in the same area, brings the total number of wildcats in the Wilcox play to 19, all in new territory embracing six Central Louisiana parishes. All of the new wildcat locations the past week were in Catahoula Parish, where two new fields have been opened within the past 3 months.

SUMMARY OF COMPLETIONS

North Louisiana

	No.	Bbl.	Footage
Oil wells: Caddo	1	12	1,017
Little Creek	1	148	2,712
Nebo	1	146	4,096
Olla	1	13	2,396
South Olla	1	143	2,744
Sligo	1	25	3,126
Urbania	1	50	1,537
Wells gas: Little Creek	2	*58	5,481
Monroe	2	*6.8	4,335
Standard	1	*29	2,903
Dry holes: Wildcat	1	.....	6,600
Converse	2	.....	5,395
Total	15	.....	42,442

Arkansas

	No.	Bbl.	Footage
Oil wells: East Schuler	1	156	5,568
Dry holes: Wildcats	1	.....	3,110
Total	2	.....	8,678

* Million cu. ft.

Probably the most active one area in the entire play is La Salle Parish. Most of the fields already discovered in the Wilcox zone are located in this parish, and wildcatting continues unabated. There are 11 wildcat tests alone in La Salle Parish, of which 7 are actually drilling. The other four are rigging up materials to start at once. As for actual field activity in the parish, the Olla field lists 6 active tests, the Trout Creek 3, Nebo 29, Little Creek 9, Urania 2, Cypress Bayou 1, and South Olla 1. This brings the total number of operations, both wildcat and field tests, to 62 for the one parish alone.

The new wildcat locations the past week are listed as follows:

Catahoula Parish (Wilcox trend): Placid Oil 3-A La. Central, NW NW 21-10n-6e.
H. L. Hunt 1-D La. Delta, NE NW 20-4n-5e.
N. H. Wheless 1-D La. Delta, SW SE 5-3n-5e.
De Soto Parish: Roscoe and Carter 1 McGill, SE NE 1-10n-13w.

Prospective Discoveries Still Testing

In Rapides Parish, the M. A. Marr and Phillips 1 Eota Realty Co., SW NE 14-4n-3e, 18 miles southwest of the Larto Lake field of Catahoula Parish, is still attempting to establish water-free production from the Wilcox zone. During the past week casing was perforated with 14 shots from 5,150-52 ft. and the hole was swabbed down 4,500 ft. then swabbed at the rate of 5 bbl. of fluid hourly, described as mostly oil and a little salt water. A ¼-in. flow choke has been installed and further testing is planned for the coming week.

Meanwhile in Tensas Parish where Carter 1 Rhodes, wildcat located in NW 29-9n-10e, which found a show of oil in the upper Wilcox section a week ago, is still drilling ahead. The show was found from 3,360-3,406 ft. which netted mud and some oil-cut mud on a drill-stem test. It is going ahead below 5,170 ft. with further shows reported on formation cuttings from 5,160-65 ft.

NORTH LOUISIANA COMPLETIONS

Fields

Caddo, Caddo Parish: A. R. Hancock 13 Helpman, SE NE 16-21n-16w, pumped 12 bbl., 1,017 ft.
Converse, Sabine Parish: Cryer Drlg. Co. 1 Whitney, NE NE 7-9n-13w, dry at T.D. 3,225 ft.
Ross Nelson, Jr., 1 De Soto Corp., NE SW 27-10n-13w, dry at T.D. 2,170 ft.
Little Creek, La Salle Parish: H. L. Hunt 102-F Goodpine, NE SW 30-9n-2e, 27,000,000 cu. ft. gas, perf. casing 2,474-78 ft., T.D. 2,740 ft.
Placid Oil 17-A Tremont, NW NW 30-9n-2e, 31,000,000 cu. ft. gas, perf. casing 2,582-86 ft., T.D. 2,741 ft.
Placid Oil 18-A Tremont, NW SW 30-9n-2e, 148 bbl. oil and 8 bbl. water, perf. casing 2,480-84 ft., T.D. 2,712 ft.
Monroe, Union Parish: J. & H. Oil 8-C Union Power Co., SE SW 16-21n-3e, 5,750,000 cu. ft. gas, T.D. 2,190 ft.
N. & W. Corp. 1 Smith, SE NW 30-20n-4e, 1,004,000 cu. ft. gas, T.D. 2,145 ft.
Nebo, La Salle Parish: Placid Oil 1 Federal Land Bank, N½ Lot 2, irregular 40-7n-3e, 146 bbl. oil and 5 bbl. water, perf. casing 3,650-60 ft., T.D. 4,096 ft.
Olla, La Salle Parish: H. L. Hunt 36-F Goodpine, NW SW 18-10n-3e, 13 bbl. oil and 4 bbl. water, perf. casing 2,368-73 ft., T.D. 2,396 ft.
South Olla, La Salle Parish: Placid Oil 10-B Goodpine, SE NE 27-9n-2e, 143 bbl. oil and 4 bbl. water 2,563-68 ft., T.D. 2,744 ft.
Sligo, Bossier Parish: Triangle Drlg. 6-A Thigpen-Herold, SE SE 13-17n-12w, 25 bbl. oil and 5 bbl. water, T.D. 3,126 ft.
Standard, La Salle Parish: Placid Oil 118 Louisiana Central, NW NW 29-11n-3e, 29,000,000 cu. ft. gas, perf. casing 2,366-72 ft., T.D. 2,903 ft.
Urania, La Salle Parish: Arkansas Fuel Oil 15-A Tremont, NE NE 35-10n-1e, 50 bbl. oil, T.D. 1,537 ft.

Wildcats

Catahoula Parish: H. L. Hunt 1-A Tensas, SW NE 7-4n-5e, top Wilcox 4,160 ft., dry at T.D. 6,600 ft.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Dec. 13	Dec. 6
Caddo light	6,675	6,710
Caddo heavy	2,255	2,280
Cotton Valley	15,865	15,975
Cross Lake	2,690	2,710
De Soto and Red River	1,010	995
Haynesville	2,700	2,680
Homer	2,960	2,950
Lisbon	2,405	2,365
Little Creek	2,965	2,880
Nebo	5,360	5,275
Olla	14,040	14,025
Rodessa	13,125	12,985
Sligo	2,570	2,550
Sugar Creek	1,395	1,440
Urania	1,995	2,025
Zwolle	975	990
Total North Louisiana	81,695	81,485

SOUTH ARKANSAS

Atlanta	2,800	2,815
Buckner	2,395	2,425
Champagnolle	755	810
Dorcheat	1,910	1,925
El Dorado	1,265	1,350
Magnolia	18,765	18,910
Nick Springs	610	625
McKamie	2,780	2,725
Rodessa	1,190	1,150
Schuler	16,610	16,590
Smackover light	1,805	1,800
Smackover heavy	12,335	12,575
Stephens	1,045	1,150
Troy	1,400	1,325
Urbana	2,680	2,690
Village	985	1,040
Total South Arkansas	73,590	73,965

MISSISSIPPI

Tinsley	75,080	74,225
Pickens	455	430
Total Mississippi	75,535	74,655

Offset Wells to Arkansas Strike Are Awaiting Outcome of Tests

The prospective discovery well in Ouachita County of several weeks ago now appears nearer a reality. It is Stassi-Bourgeois 1 Westley, 7-15-19. After some delay a pumping unit has been installed at the well and after it has been thoroughly cleaned out a satisfactory discovery well is expected. It will open a new and deeper level for the Smart field just a mile to the west.

The new strike is producing from the Travis Peak section found with saturation from 3,489-94 ft. Total depth is 3,627 ft. Several locations have been made around this prospective discovery and drilling will start when the final and favorable outcome is known at the 1 Westley.

Shallow Discovery Gaged; Second Well Brought In

The shallow Nacatoch sand discovery well in Ouachita County drilled by Lee Bergman as 2 Cook, NW SW 27-15n-18w, 6 miles from the Stephens field, has been officially gaged at 50 bbl. daily, pumping. Production is from total depth of 1,616 ft. Meanwhile, the same operator's 3 Cook, NW NW SW 27-15s-18w, same section as the discovery, has been gaged at 45 bbl. of oil and 700 bbl. of water daily from a total depth of 1,620 ft. Several additional wells are planned for this new spot.

New Mount Holly Smackover Field Active

The new Smackover lime field named Mount Holly in Union County, opened 2 weeks ago by Atlantic Refining 1 Davis unit, NE NW 15-17s-18w, is receiving rapid development. The discovery gaged 251 bbl. of 38-gravity oil daily from perforation from 7,166-68 ft. The same company is drilling below second string of casing set at 2,200 ft. in the 2 Davis, 10-17s-18w, a diagonal offset to the northwest. A new operator has entered the field with the staking of 1 Davis by Lion Oil Refining Co. It is located in SE SE 10-17s-18w.

ARKANSAS COMPLETIONS

Wildcats

Union County: Marine Oil 1 Newsom, NE SE 19-17s-13w, dry at 3,110 ft., T.D.

Fields

East Schuler, Union County: Atlantic Refining 1 J. M. Bishop, NW SW 13-18s-17w, 156 bbl. oil, perf. casing 5,547-51 ft., T.D. 5,568 ft.

Permian Basin, Panhandle Fields

(Continued from Page 69)

Bailey County: Broderick & Calvert 1 G. H. Hayward, 4,167 ft. from W and 1,389 ft. from S lines, Lge. 73, Sutton C.S.L. Sur., 5,500-ft. test, drilling 5,300 ft.
Borden County: C. E. Hyde 1 Miller-Looney, 330 ft. from N and W lines, Sec. 10, Blk. 33, T.&P. Sur., drilling 900 ft.
Anderson-Prichard 1 Johnson, Sec. 1, Blk. 1, John DeShazo Sur., 660 ft. from SW cor. Sec. 23, Blk. 10, E.L.&R.R. Sur., S.D. 4,503 ft.
M. L. Richards 1 W. R. Dunn, SW NE Sec. 307, Blk. 97, H.&T.C. Sur., 3,200-ft. test, preparing to plug, T.D. 3,060 ft.
Briscoe County: Phillips 1 Montague, NE NE Sec. 6, Blk. B-4, A.B.&M. Sur., drilling 5,975 ft.
Crosby County: George Callihan and C. L. Wagner 1 E. M. Wahlenmaier, 460 ft. from N and E lines, Sec. 3, Blk. D-15, Waxahachie Tap Sur., setting casing 2,930 ft., P.B. from 4,034 ft.
Dawson County: Ray Albaugh 1 Handley, 1,980 ft. from W and 660 ft. from S lines, Sec. 36, Blk. M, E.L. Sur., 5,250-ft. test, testing, T.D. 4,977 ft.
Gaines County: Amerada 1 Hudson, Sec. 60, P.S.L. Sur., 660 ft. from N and W lines, Sec. 60, 7,000-ft. test, preparing to deepen, T.D. 5,000 ft.
Amon G. Carter 4-D Wasson, NW SE Sec. 50, Blk. AX, P.S.L. Sur., testing, T.D. 11,108 ft.
Likins & Hall 1 Jones, SW NW Sec. 13, Blk. A-7, P.S.L. Sur., 7,200-ft. test, drilling 6,150 ft.
Hockley County: Anderson-Prichard and American Drilling Co. 1 Ellwood, NW NW NW Sec. 15, Blk. A, R. M. Thomason Sur., 5,500-ft. test, drilling 5,452 ft.
Commerce Trust 1 Baylor C.S.L., Lge. 31, Labor 19, 440 ft. from N and E lines of labor, first report.
Lubbock County: Harrison & Foster 1 Steck, SE SE Sec. 7, Blk. A, John Gibson Sur., drilling 4,915 ft.
Mitchell County: H. B. Owenby Drilling Co. 1 Morrison Oil & Royalty, 660 ft. from S and E lines of NE Sec. 34, Blk. 29, T.&P. Sur., S.D. 3,120 ft., orders.

Twenty-Two New Oil Wells Completed in Panhandle

AMARILLO, Tex., Dec. 15.—Of the 26 tests completed in the Panhandle district the past week, three were dry; one a small gas well, and the remaining 22 were completed for oil. The daily potential of the oil completions amounted to 4,651 bbl. The best completion for the week was in the Taylor field of Grav County where the Skelly Oil Co. 6 Lovett pumped 723 bbl. in 24 hours. The producer is located in Section 36, Block B-2, H.&G.N. Survey. The W. H. Taylor 9 fee, also in this pool and a southeast try for pool extension, had a daily yield of 700,000 cu. ft. of gas.

During the week 15 new locations were announced for the Panhandle district. Gray and Hutchinson counties received six each and Wheeler County three. All

new locations were confined to the producing areas of the field.

TEXAS PANHANDLE COMPLETIONS

Bailey County: Calvert & Broderick 1 Hayward, Lab. 24, Lge. 172, Sutton C.S.L. Sur., dry at 5,601 ft.

Gray County: Continental 15 Finley, Sec. 32, Blk. B-2, H.&G.N. Sur., 109 bbl., pumping, pay 2,935-75 ft., T.D. 2,980 ft.

Cree & Hoover 1 Davidson, Sec. 65, Blk. B-2, H.&G.N. Sur., 80 bbl. in 8 hr., pumping, 290-qt. shot 2,936-3,036 ft., T.D. 3,048 ft.

Dolomite Oil Co. 2 Johnson, Sec. 82, Blk. 3, I.&G.N. Sur., dry at 3,320 ft., lost hole.

Dolomite Oil Co. 3 Johnson, Sec. 88, Blk. 3, I.&G.N. Sur., dry at 3,321 ft.

Phillips 4 Davidson, Sec. 86, Blk. B-2, H.&G.N Sur., 277 bbl., pumping, 385-qt. shot 2,976-3,078 ft.

Skelly 6 Lovett, Sec. 36, Blk. B-2, H.&G.N. Sur., 723 bbl., pumping, 560-qt. shot 2,920-3,004 ft.

Skelly 139 Schafer, Sec. 109, Blk. 3, I.&G.N. Sur., 402 bbl., pumping 267-qt. shot 3,208-56 ft.

Taylor 9 fee, Sec. 8, Blk. B-2, H.&G.N. Sur., 700,000 cu. ft. gas, 150-qt. shot 2,715-90 ft., T.D. 3,125 ft.

Skelly 141 Schafer, Sec. 190, Blk. 3, I.&G.N. Sur., 340 bbl., pumping, 250-qt. shot 3,230-75 ft.

Texas 7 Davidson, Sec. 65, Blk. B-2, H.&G.N. Sur., 58 bbl., pumping, 360-qt. shot 2,965-3,042 ft., T.D. 3,044 ft.

Kewanee Oil Co. 9-A Morse-Adams, Sec. 3, Blk. 26, H.&G.N. Sur., 36 bbl., pumping, pay 2,625-2,730 ft., T.D. 2,739 ft.

Texas 8-A McLarty-Lester, Sec. 2, Blk. 1, A.C.H.&B. Sur., 96 bbl., pumping, pay 2,630-95 ft.

Gardner Bros. 8 Barrett, Sec. 128, Blk. 3, I.&G.N. Sur., 48 bbl., pumping, 400-qt. shot 3,180-3,310 ft.

Hutchinson County: Buffalo Oil Co. 1 Cockrell, Sec. 3, Blk. M-21, T.C. Sur., 135 bbl., pumping, 420-qt. shot 2,950-3,115 ft., T.D. 3,125 ft.

Crosbie Inc. 45 Pitts, Sec. 7, Blk. M-21, T.C. Sur., 235 bbl., pumping, 475-qt. shot 2,760-2,865 ft.

Gulf 108 Dial, Sec. 36, Blk. M-23, T.C. Sur., 149 bbl. oil and 93 bbl. water, pumping, 400-qt. shot 2,945-3,085 ft., T.D. 3,090 ft.

Phillips 9 Lizzie, Sec. 25, Blk. M-23, T.C. Sur., 219 bbl., pumping, 480-qt. shot 3,180-3,260 ft.

Phillips 7 Staples, Sec. 25, Blk. M-23, T.C. Sur., 273 bbl., pumping, 340-qt. shot 3,169-3,261 ft.

Phillips 8 Staples, Sec. 25, Blk. M-23, T.C. Sur., 277 bbl., pumping, 380-qt. shot 3,151-3,212 ft.

Shell 28-B Harvey, Sec. 14, Blk. M-2 M-21, T.C. Sur., 305 bbl., pumping 155-qt. shot 3,024-3,080 ft.

Skelly 11-A Watkins, Sec. 13, Blk. M-21, T.C. Sur., 375 bbl., pumping, 490-qt. shot 2,785-2,875 ft., T.D. 2,880 ft.

Stanolind 3 Jasper, Sec. 13, Blk. V, Hedgecock Sur., 108 bbl., pumping, 500-qt. shot 3,100-3,200 ft.

Stekol Oil Co. 13 Whittenburg, Sec. 20, Blk. 47, H.&T.C. Sur., 50 bbl., pumping, 210-qt. shot 2,730-2,815 ft., T.D. 2,843 ft.

Stekol Oil Co. 18 Whittenburg, Sec. 21, Blk. 47, H.&T.C. Sur., 64 bbl., pumping, 200-qt. shot 2,985-3,061 ft.

Wheeler County: Portman & Jenkins 3 Patterson, Sec. 89, Blk 13, H.&G.N. Sur., 130 bbl., pay 2,113-15 ft.

Monument Pool West Outpost Is Started

HOBBS, N. M., Dec. 15.—A feature of Southeast New Mexico oil developments last week was the staking of a ¾-mile west outpost to the northwest side of the Monument pool in Lea County. Skelly Oil Co. will seek extension of the pool in 3 Monstate, 660 ft. out of the northwest corner of 13-19s-36e. Lee Drilling Co., Tulsa, has been awarded the contract. Cellar and pits have been dug at the location and rotary rig is awaited.

The Skelly sand area of Lea gained a wildcat location in Western Gas Co. 1 J. H. Duthie, 1,980 ft. from the south and east lines of 18-23s-37e, 1 mile northwest of production. The test is ½ mile north of the firm's location in 19-23s-37e, also on Duthie land, abandoned without ever being drilled.

SOUTHEAST NEW MEXICO COMPLETIONS

Wildcats

Lea County: Western Gas 1 Combest, SW NE 35-23s-36e, junked, T.D. 1,966 ft. in salt and anhydrite, rig skidded.

Fields

South Lovington, Lea County: Amerada 7-LA State, Sec. 1-17s-36e, flowed 239 bbl. through 21/64-in. choke on tubing, pay 4,652 ft., acid, T.D. 4,946 ft., *short southwest extension.*

Mattix, Lea County: Skelly 1 Liberty Royalties, 7-24s-37e, flowed 73 bbl. through 17/64-in. choke on tubing, pay 3,480 ft., shot, T.D. 3,595 ft.

Michigan Fields

(Continued from Page 72)

Osceola County

Cedar Township: Sun Oil Co. 2 Richardson, SW SW SW 15-18n-9w, wildcat, dry, T.D. 4,040 ft.

Lincoln Township: W. Spencer Cook & Voorhees Drilling Co. 1 Kremmin, C-S½ SE SE 8-18n-10w, dry, T.D. 3,646 ft.

Taggart Bros. Co. 27 State C-SE Sec. 17, 12,900,000 cu. ft. natural gas, T.D. 1,178 ft.

Taggart Bros. Co., 29 Kalb-Moore-Witt, C-E½ Sec. 18, 10,850,000 cu. ft. natural gas, T.D. 1,264 ft.

Taggart Bros. Co. 30 Richards-Campbell-Mann, C NW Sec. 19, 9,700,000 cu. ft. natural gas, T.D. 1,247 ft.

Gordon Oil Co. & Bolger Oil Co. 1 Sweet, C-S½ NE NE Sec 20, dry, T.D. 3,595 ft.

Pure Oil Co. 2 Campbell C-S½ NE SW Sec. 19, 1,020 bbl., T.D. 3,612 ft.

Ohio Oil Co. A-2 Johnson, C-N½ SW SW Sec. 29, 7,056 bbl., T.D. 3,547 ft.

Ohio Oil Co. 3 Auten comm., C-N½ SE NW Sec. 29, 2,064 bbl., T.D. 3,558 ft.

Ohio Oil Co. 2 Johnson, C-N½ NW NE Sec. 30, 14,400 bbl., T.D. 3,642 ft.

Ohio Oil Co. 4 Fatum, C-S½ SE SE Sec. 30, 2,880 bbl., T.D. 3,608 ft.

Pure Oil Co. 2 Mitchell, C-S½ NE NW Sec. 30, pumping 25 bbl., acid, T.D. 3,600 ft., plugged back from 3,616 ft.

Pure Oil Co. 3 Mitchell, C-N½ NE NW Sec. 30, 1,128 bbl., acid, T.D. 3,619 ft.

Ottawa County

Tallmadge Township: W. R. Borough, Inc., wildcat test, NE SE SW 21-7n-13w, dry, T.D. 2,011 ft.

Roscommon County

Lake Township: Sun Oil Co. 1 Hunt, W½ NW NW 29-23n-4w, wildcat, dry, T.D. 3,408 ft.

Roscommon Township: Ohio Oil Co. A-1 State, C-N½ NE SE 13-21n-3w, 1,056 bbl., T.D. 3,250 ft.

Tuscola County

Akron Township: Smith Petroleum Co. 1 Partlo, C-E½ NE SW 28-14n-8e, wildcat, pumping 50 bbl., acid, T.D. 2,869 ft.

Van Buren County

Bloomingdale Township: Circle Drilling Co. 1 Adkins, SW NE NW 23-1s-14w, wildcat, dry, T.D. 1,660 ft.

Clement Stevens, Tr., 2 Schindler, NW SE NE Sec. 10, 25 bbl., acid, T.D. 1,291 ft.

Columbia Township: James A. Conant 1 Gatto, SE NW SW 2-1s-15w, dry, T.D. 1,437 ft.

Paw Paw Township: Sun Oil Co. 1 Buys, SE SE SE 5-3s-14w, wildcat, dry, T.D. 1,315 ft.

Illinois Fields

(Continued from Page 58)

Walpole, Hamilton County: Texas 1 R. Hall, E½ SE NW 27-6s-6e, pumped 41 bbl., 30-qt. shot 3,072-94 ft., 40-qt. shot 3,071-91 ft., Aux Vases sand 3,051 ft., 3,084-91 ft., T.D. 3,094 ft.

Tuesday Oil 3 H. H. Phillips, NW NW SW 26-6s-6e, pumped 240 bbl., 25-qt. shot 3,073-90 ft., Aux Vases 3,064-84 ft., 3,103 ft.

Woburn, Bond County: A. J. Hausmann 3-A E. Dunn, SW SW SE 3-6n-2w, pumped 20 bbl. oil and 20 bbl. water, 10-qt. shot 1,015-22 ft., T.D. 2,022 ft.

Woodlawn, Jefferson County: Kingwood 9 Bank of Woodlawn, NW SE NW 35-2s-1e, pumped 170 bbl., 30-qt. shot 1,953-68 ft., Benoist 1,950 ft., T.D. 1,968 ft.

L. B. Jackson 3 Long-Meyer, SE SE NE 34-2s-1e, pumped 83 bbl. oil and 5 bbl. water, 30-qt. shot 1,982-86 ft., T.D. 1,998 ft., P.B. 1,996 ft.

Nation Oil 7 C. A. Piper, NE NE NW 1-3s-1e, pumped 125 bbl., 60-qt. shot 1,970-86 ft., Benoist 1,969 ft., T.D. 1,986 ft.

Magnolia 3 J. J. Kaminski, NW SE SE 2-3s-1e, pumped 13 bbl., 5-qt. shot 1,997-99 ft., Benoist 1,993 ft., T.D. 1,999 ft.

Nation Oil 8 C. A. Piper, SW NE NW 1-3s-1e, pumped 150 bbl., 60-qt. shot 1,950-80 ft., Benoist 1,949-80 ft., T.D. 1,983 ft.

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Discovery in Stowell Area Logs Thick Frio Sand Pay

By NEIL WILLIAMS

HOUSTON, Tex., Dec. 15.—Opening of a new Frio sand field in Jefferson County, and a scheduled production test of a wildcat located in the upper Wilcox trend in southern Houston County, featured Texas Gulf Coast developments the past week.

What may prove to be a major discovery appears to have been opened in the Stowell area, western Jefferson County, as Glen H. McCarthy 1 Crawford was flowing at the estimated rate of 25 bbl. of 34.5-gravity oil per hour through a ¼-in. choke while testing through perforated casing in the Frio sand at 8,850-80 ft. Tubing pressure was 1,400 lb. and casing pressure 850 lb. Information as to where the Frio formation was topped was not available, but the production is believed to be from the upper section, and is reported to be more than 100 ft. thick with 60 ft. net oil sand. In addition to the Frio, drill-stem testing in the Marginulina sand at 8,500 ft. recovered pipe-line oil. Total depth of the well is 9,313 ft., with 5½-in. casing cemented below 9,000 ft.

While the potentiality of an area cannot be accurately measured by one well, the thickness of the sand section, and its structural relation to other producing fields in the area, mark it as a possible major discovery, and future development will be watched with wide interest. The field is situated about 13 miles east of the Anahuac field in Chambers County, the second largest oil reserve in the district which produces from a very large sand section based at approximately 7,100-7,200 ft. It is also about 5 miles northeast of the Seabreeze field and about the same distance southwest of the Fannett field.

As this well was being completed, another possible Frio sand discovery was indicated for Chambers County, as Rowan & Nichols Oil Co. were cutting sidewall cores in 1 W. H. Land, located in the S. P. Donley Survey, south of the Anahuac field. Total depth of the well is 8,400 ft., and side-wall cores are being cut following an electrical survey which showed possible production in the Frio sand below 8,200 ft.

Wilcox Play Spurred by Lovelady Showing

Added impetus was given the Wilcox play now taking place along the upper tier of Texas Gulf Coast counties as preparations were being made to test C. P. Culmore et al 1 G. T. Lundy, located in the John Forbes Survey, about 1½ miles southeast of Lovelady in Houston County. This well was drilled to a total depth of 5,016 ft., and 5½-in. casing was cemented at 3,295 ft. after an electrical survey showed good possibilities in the Wilcox sand at 3,214-20 ft. Four sidewall cores in the section recovered sautrated sand which showed a good cut on an ether test.

Other sands were shown at 2,678-88 ft. and 2,970-75 ft., but were indicated as carrying water. The first sand was topped about 330 ft. below the top of the section logged at 2,340 ft. Other geological markers were reported as follows: Crockett 1,028 ft., Sparta 1,240 ft., Weches 1,514 ft., Queen City 1,709 ft., Reklaw 1,918 ft., and the Carrizo at 2,104 ft.

The prospective pool opener is situated north of the Kittrell field which is, with the exception of the old Clay Creek field in Washington County, the only field to produce from the upper Carrizo-Wilcox. This particular area has been neglected in so far as any large-scale wildcatting program is concerned. This has been due largely to the successful downdip development, and earlier theories that only minor production could be developed this far updip. This theory has been within the past year discounted by successive discoveries opened in Central Louisiana, directly on strike with the Texas sector.

Exploration Increases Throughout Trend Area

Indicative of the growing interest in this area is reflected by the large-scale geophysical and leasing program now under way, and the starting of several wildcats, several of which have reached interesting stages. Of particular interest is Joe O. Ehlinger 1 Foster Lumber Co., located in the J. Wilson Survey, Walker County. A broken sand section showing oil is reported to have been logged at 2,048-98 ft., the total depth, where a drill-stem test was scheduled to be made. Top of the Jackson was reported at 2,051 ft.

In Trinity County, 3 miles east of Glendale, Magnolia Petroleum Co. 1 Cameron Lumber Co. is drilling below 6,650 ft. Top of the Wilcox was not reported. In San Augustine County a block of approximately 6,000 acres has been assembled subject to a 6,500-ft. Wilcox test. In addition, geophysical option on several thousand acres, controlled by several large lumber companies, was recently granted a major company. A recent survey of geophysical activity along the trend show a total of 12 crews working, and this activity is being increased weekly.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Fields	17	3,138	98,761
Dry holes: Fields	1	.....	8,398
Wildcats	1	.....	7,706
Total	19	.....	114,865

Clodine Field Extended Two Ways

Minor extensions to the Clodine field, Fort Bend County, were in the making as preparations were being made to complete two wells. Houston Oil Co. 3 Thompson cored the Yegua sand at 7,459-97 ft. and from 7,501-09 ft., and casing was cemented on bottom at 7,543 ft. Providence Oil Co. 2 Hatfield topped sand at 7,470-88 ft., and testing is under way after cementing casing on bottom at 7,538 ft.

Conroe Extension Gets Two New Wells

Two additional producers were being added to the north-extension area of the Conroe field, Montgomery County. H. L. Hunt 1 Kountze, D. W. Collins Survey, cored gas sand at 5,025-35 ft., oil sand at 5,070-75 ft., and 5½-in. casing was cemented at 5,110 ft., the total depth. J. N. Rayzo 1 Clyde Brent, located in the same survey, cored gas sand at 5,047-52 ft., oil sand at 5,052-61 ft., shale at 5,061-75 ft., and casing was cemented at 5,064 ft. The two wells are located south of John Blaffer 1 Bailey, completed several weeks ago to open a new producing area ½ mile north of established production which is separated from the field proper by dry holes.

Fostoria Discovery Well Put on Production

Atlantic 1 Foster Lumber Co., the discovery well of the Fostoria area, Montgomery County, is being placed on production after making a series of squeeze jobs in an attempt to eliminate salt-water intrusion. On a drill-stem test through perforated casing in the upper Cockfield sand at 5,790-94 ft., the well flowed at the estimated rate of 8 bbl. per hour, and when the testing tool was recovered from the hole, 146 bbl. of oil and 1½ bbl. of salt water was recovered, which indicates that the well when finally completed will not be entirely free of salt water.

In the Goodrich area, Polk County, another recent Cockfield discovery, Pan American 2-B Texas Long Leaf Lumber Co., 933 ft. northwest of the discovery well, is flowing at the rate of 54 bbl. of oil and 14 bbl. of salt water daily through a ¾-in. choke from perforated casing at 4,032-38 ft. Tubing pressure was 635 lb.

Lissie Discovery Well Is Flowing

Wynn Crosby Drilling Co. 1 Poole, the discovery well of Wilcox production in the Lissie area, Wharton County, is reported to be flowing at the daily rate of 218 bbl. of 49.4-gravity oil through a 7/32-in. choke, while testing through a new set of perforations at 9,655-81 ft. The gas-oil ratio was 12,000 to 1. The well was recompleted deeper in the section following a test the previous week at 9,590-9,602 ft., and 9,614-20 ft. which tested 52 bbl. of 50-gravity distillate on a 13-hour drill-stem test.

Big Hill Flank Well to Test

On the north flank of the Big Hill dome, Jefferson County, Stanolind 1 Anderson was being prepared for a production test after perforating liner at 8,705-20 ft. Total depth is 9,500 ft., and 350 ft. of 5-in. liner was cemented to test several sands logged by an electrical survey at intervals from 7,011 ft. to 8,700 ft.

TEXAS GULF COAST COMPLETIONS

Wildcat

Wharton County: Seaboard Oil Co. 1 Baklik, dry, T.D. 7,706 ft.

Fields

Dyersdale, Harris County: H. C. Cockburn 29 Burkett, 373 bbl., ¼-in. choke, 4,046-56 ft., T.D. 4,064 ft.

Ganado, Jackson County: Texas 3 Hultiguist, 159 bbl., ⅛-in. choke, perf. casing 6,406-8 ft., T.D. 6,500 ft.

Lolita, Jackson County: Humble 27-A L. Ranch, 130 bbl., ¼-in. choke, top sand 6,378 ft., T.D. 6,392 ft.

Lucky, Matagorda County: Stanolind 1 Thompson, 44 bbl., ⅛-in. choke, perf. casing 8,937-40 ft., T.D. 9,700 ft.

Magnet, Wharton County: Humble 49 Cockburn, 98 bbl., ¼-in. choke, T.D. 5,536 ft.

Markham, Matagorda County: Ohio 14 J. C. Carlson, 170 bbl., ⅛-in. choke, perf. casing 7,693-95 ft., T.D. 8,125 ft.

Maurbro, Jackson County: McCrory-Westhoff 1 Foster Petroleum Co., 303 bbl., ¼-in. choke, sand 5,211-30 ft.

Humble 1 Pritchett, 408 bbl., ¼-in. choke, T.D. 5,238 ft.

North La Ward, Jackson County: Magnolia 5 Gordon, 133 bbl., 7/64-in. choke, perf. casing 5,222-26 ft., T.D. 5,227 ft.

Moore & Ahern 1 Badet, 80 bbl., 5/32-in. choke, perf. casing 5,216-21 ft., T.D. 5,277 ft.

North La Ward, Jackson County: Phillips 1 J. B. Johnson, 128 bbl., ⅛-in. choke, perf. casing 8,220-23 ft., T.D. 5,280 ft.

Port Neches, Orange County: Texas 15 Stark, 99 bbl., ¼-in. choke, T.D. 4,545 ft., P.B. T.D. 3,497 ft.

Segno, Polk County: Humble 44-B Kirby Lumber Co., dry, T.D. 8,398 ft.

West Columbia, Brazoria County: Texas 44 Abrams, 346 bbl., ¼-in. choke, perf. casing 5,640-87 ft. and 5,694-5,704 ft., T.D. 5,898 ft.

West Ranch, Jackson County: Magnolia 22-A West ranch, 130 bbl., 7/64-in. choke, perf. casing 5,512-20 ft., T.D. 5,530 ft.

Withers, Wharton County: F. W. Michaux 13-A Pierce, 169 bbl., 5/32-in. choke, perf. casing 5,372-76 ft., T.D. 5,414 ft.

F. W. Michaux 15-A Pierce, 211 bbl., 5/32-in. choke, perf. casing 5,347-54 ft., T.D. 5,410 ft.

F. W. Michaux 35-A Pierce, 157 bbl., 5/32-in. choke, perf. casing 5,337-47 ft., T.D. 5,395 ft.

TEXAS GULF COAST DRILLING REPORT

Brazoria County: Glenn H. McCarthy 1 Munson, Bailey Prairie area, H.T.&B. No. 1, rigging up.

West Production Co. 1-A Cowell, H.T.&B. Sur. 5, rigging up.

Fort Bend County: W. L. Goldson 1 A. Smith, F. Maddings Sur., rigging up.

H. L. Hunt 1 Moore estate, H. Scott Sur., drilling shale 4,786 ft.

Harris County: Texas 1 Harris Land & Improvement Co., Victor Blanco Sur., building road.

Jackson County: John Mayo 1 Rodesney, J. Rambo Sur., drilling shale and lime 4,148 ft.

Rowan Drilling Co. 1 McCulloch, A. B. Williams Sur., drilling sandy shale 3,002 ft.

Jefferson County: W. P. Luse 1 Lenora Kemp, D. Burrell Sur., top salt water sand 8,006 ft., drilling shale and sand 8,249 ft.

Montgomery County: Glenn A. McCarthy 1 Tucker, S. H. Houston Sur., Magnolia field, drilling shale 3,180 ft.

Newton County: H. C. Cockburn 1 Texas A. & M. College, J. T. Lewis Sur., drilling sand and shale 7,848 ft.

Oklahoma Fields

(Continued from Page 67)

Latimer County: Limestone 2-A Kilpatrick, SE NW SE 16-5-18, old well worked over, sandy lime 2,785-2,828 ft., T.D. 2,849 ft., gaged 500,000 cu. ft. gas, 500 lb. R.P.

Le Flore County: Western Oklahoma Gas 1 Mills, W½ SW SE 28-9-24, gaged 250,000 cu. ft. gas, 970 lb. R.P., 5-in. 5,036 ft., T.D. 5,268 ft.

Muskogee County: Rounsville 1-A Davis, NW NE SE 17-13-16, dry, T.D. 2,161 ft.

J. R. Parks 1 Hildebrand, S½ S½ NE 17-14-19, dry, T.D. 1,143 ft.

Okmulgee County: Wicks et al 2 Barber, SW SW 14-14-14, dry, T.D. 1,819 ft., Booch 1,805 ft.

Link Oil 10 Buchannan, S½ S½ NW 6-14-14, repressure well, T.D. 1,717 ft.

W. W. Wilson 9-B Schact, NW SW SE 22-14-14, dry, T.D. 2,402 ft., Wilcox 2,278 ft.

L. L. Vincent 2 West, SW SE NE 6-13-11, dry, T.D. 3,329 ft., Viola 3,235 ft.

J. E. Dow 1-A Walters, SE NW NW 24-13-14, dry, T.D. 1,341 ft.

Osage County: Magnolia 7 Osage, SE NW NW 14-26-6, pumped 110 bbl., Burbank 2,839 ft., 7-in. 2,840 ft., shot, T.D. 2,922 ft.

Seminole County: Magnolia 2 Spillman, NE NE SE 12-6-7, pumped 48 bbl., 5-in. casing 1,203 ft., shot 1,207-18 ft., T.D. 1,218 ft.

G. J. Lynch 1 Ragland, SE SE NW 25-5-5, dry, T.D. 2,610 ft., Hunton 2,412 ft.

Tulsa County: Birdcreek 1 Rice, NW SE 30-22-13, dry, T.D. 1,862 ft.

Wagoner County: Bert Mullins 1 Tiger, SE SW SE 15-19-15, dry, T.D. 930 ft.

Ruso Drilling 1 Senter, SE SE NW 5-16-17, dry, T.D. 1,417 ft.

All Sections Show Increased Drilling; Deep Tests Continue

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Dec. 15.—Completions continued routine during the past week in the lower eastern fields. The end of the month totals found increasing activity in all sections with some additional new oil production being reported.

On the Fayette anticline in South Huntington Township, Fayette County, Pennsylavnia, the test of the Peoples Natural Gas Co. is drilling at 6,645 ft. on the Jacobs Creek Oil Co. lease and making good progress.

On Chestnut Ridge in South Union Township, Fayette County, this company is drilling at 7,752 ft. in 4 Piedmont Coal Co. and Onondaga has not been reached. Here, New Penn Development Co., William E. Snee et al are drilling at 4,718 ft. in 4 Heyn. In these operators' tests on the Kirby estate and Carothers farm, work is progressing more slowly. The Kirby test has had a fishing job and it is now drilling past

SUMMARY OF COMPLETIONS

Southwest Pennsylvania

	No.	Bbl.	Footage
Gas wells	7	*0.62	20,202

West Virginia

	No.	Bbl.	Footage
Oil wells	4	137	8,038
Gas wells	9	*1.72	21,236
Dry holes	1	.....	2,207
Total	14	.....	31,481

* Million cu. ft.

tools. In the Carothers test after running casing which lodged at 5,400 ft. and pulling the casing, so far it has been impossible to reenter the hole at 5,400 ft., although the bottom was 7,076 ft.

Here, Greensboro Gas Co. drilled to 7,042 ft. in the test on the Barton estate with casing hung at 6,934 ft. and had to cement back up the casing to fill a cave below the pipe. On Laurel Ridge, New Penn Development Co. and William E. Snee are clearing the location for a test on the John E. and Eleanor Beck farm in Ligonier Township.

In Richhill Township, Greene County, Natural Gas Co. of West Virginia is drilling at 6,200 ft. in the test on the Andrew Workman (Alley) farm on the Washington anticline. In Beaver County, St. Joseph Lead Co. is down 3,055 ft. in the test on the J. P. Koehler heirs farm in Center Township.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Allegheny County

Penn Township: Peoples 1 W. F. Wagner, 14,000 cu. ft. gas, Elizabeth sand, T.D. 3,610 ft.

Armstrong County

Boggs Township: Peoples 1 Robert McCauley, 52,000 cu. ft. gas, Bradford sand, T.D. 3,400 ft.

Clarion County

Red Bank Township: Owens Illinois 1 J. H. Young, 62,000 cu. ft. gas, Kane sand, T.D. 3,250 ft.

Fayette County

German Township: Carl White et al 1 fee, 50,000 cu. ft. gas, Stray sand 2,356-63 ft., T.D. 2,594 ft.

Greene County

Jefferson Township: Peoples 1 Daniel Eaton, 34,000 cu. ft. gas, Bayard Stray 3,205-32 ft., gas 3,206 ft., T.D. 3,390 ft.

Washington County

Morris Township: Union Gasoline & Oil 5 W. E. Craft, 363,000 cu. ft. gas, Salt sand 1,427 ft., gas 1,435-39 ft., T.D. 1,439 ft.

West Bethlehem Township: Equitable Gas 1 Amanda E. Barr, drilled deeper, 231,000 cu. ft. gas, Bayard stray 2,913-21 ft., gas 2,915-18 ft., T.D. 2,922 ft.

Westmoreland County

Allegany Township: Apollo Gas 1 John Chovanes, 45,000 cu. ft. gas, Bradford sand, T.D. 2,519 ft.

West Virginia Deep Test Is Shot for Third Time

The rotary test of the Hope Natural Gas Co. on the Alfred Woofter farm in Freemans Creek district, Lewis County, was shot for a third time. Before this shot, it gaged about 450,000 cu. ft. gas and the shot was placed at 6,961-7,036 ft. and consisted of 1,650 lb. 80 per cent gelatin. The hole is now being cleaned out. The 7-day rock pressure was 2,300 lb.

In Washington district, Jackson County, this company's test on the O. C. Parsons farm in which there was a show of gas and some water in the Oriskany sand was shot after the water was sealed off. The results were negligible.

WEST VIRGINIA COMPLETIONS

Boone County

Washington district: South Penn 3 J. M. Billups, dry, Big Lime 1,442-1,650 ft., Big Injun 1,650-1,698 ft., Berea 2,148-78 ft., small show of gas after shot, T.D. 2,207 ft.

Braxton County

Otter district: R. L. McCulty 5 P. S. Gerwig, 492,000 cu. ft. gas, Salt sand, T.D. 1,688 ft.

Pittsburgh & West Virginia 7542 G. B. Howell, drilled deeper, 22,000 cu. ft. gas, Injun sand, before shot, T.D. 2,137 ft.

Calhoun County

Center district: Godfrey L. Cabot 11 Allen Hardman, 200,000 cu. ft. gas, Little lime 1,868-75 ft., Big lime 1,880-1,993 ft., Big Injun 1,993-2,001 ft., gas 2,046-51 ft., T.D. 2,098 ft.

Sheridan district: South Penn 4 Frank E. Rothlisberger, 5 bbl., Maxton sand, T.D. 1,777 ft.

Sherman district: Creed Yoak 2 Scotch McDonald, 120 bbl. in 3 days by flow, Injun sand, T.D. 2,300 ft.

Hope Natural 8567 Fred S. Gainer, 600,000 cu. ft. gas and 9 bbl., Injun sand, T.D. 2,040 ft.

Gilmer County

DeKalb district: Hope Natural 6783 Edward Reynolds, drilled deeper, start 1,702 ft., 3 bbl., Maxton sand 1,702-08 ft., Big lime 1,731-53 ft., Injun 1,812-1,920 ft., oil 1,702-8 ft., T.D. 1,921 ft.

Clem S. Morris 2 Wash Barnes (W. F. Roberts), 200,000 cu. ft. gas, Maxton sand, T.D. 2,100 ft.

Glenville district: H. B. Scott 1 Charles Blank, 350,000 cu. ft. gas, Big Injun 1,537-1,649 ft., gas 1,609-49 ft., T.D. 1,660 ft.

Kanawha County

Elk district: Delmos Hill 1 O. D. Hill, 10,000 cu. ft. gas, Weir sand, T.D. 4,215 ft.

Marion County

Mannington district: Hanley, Beatty and McIsaacs 1 S. Frank Kennedy, dry, through fourth sand, T.D. 3,231 ft. This was an old well reclaimed but there was only a show of gas.

Marshall County

Liberty district: Cameron Light & Heat 2 Lizzie McConaughey, 150,000 cu. ft. gas, Pittsburgh Coal 978-83 ft., Fifth sand 2,974-80 ft., Stray 2,995-99 ft., T.D. 3,100 ft.

Monongalia County

Battelle district: Manufacturers 3615 Ada E. Shriver, drilled deeper, 719,280 cu. ft. gas, Pittsburgh Coal 912-21 ft., Fifth sand 3,182-87 ft., Bayard 3,328-30 ft., T.D. 3,354 ft.

Ritchie County

Grant district: F. S. Deem 12 L. C. Stephens, drilled deeper, 25,800 cu. ft. gas, Injun sand, T.D. 2,008 ft.

Taylor County

Booths Creek district: Pittsburgh & West Virginia 6124 D. Bruce Mason, 175,000 cu. ft. gas, Big Injun 1,014-1,119 ft., gas 1,025-31 ft., T.D. 1,127 ft.

Wayne County

Union district: Industrial Gas Co. 1 Samuel S. Booth, 34,900 cu. ft. gas, Big lime 1,324-1,484 ft., Big Injun 1,539-1,650 ft., Berea 2,109-14 ft., Brown shale 2,485-2,530 ft., 2,545-2,645 ft., and 2,665-3,000 ft., T.D. 3,008 ft.

Wetzel County

Green district: W. F. Burgess 1 C. M. and W. F. Burgess, 110,000 cu. ft. gas before shot, Big Injun 2,205 ft., gas 2,210 ft., T.D. 2,240 ft.

Southwest Texas Fields

(Continued from Page 69)

¼-in. choke, perf. casing 3,792-3,803 ft., T.D. 3,818 ft.

Petronilla, Nueces County: Stanolind 1 Gillette, 100 bbl. 12 hr., ⅛-in. choke, perf. casing 7,312-22 ft., T.D. 7,340 ft.

Richard King, Nueces County: Southern Minerals 22 King, 76 bbl., ⅛-in. choke, perf. casing 5,576-81 ft., T.D. 5,610 ft.

Stratton, Nueces County: Southern Minerals 32 Stratton, 81 bbl., 7/64-in. choke, perf. casing 6,643-51 ft., 6,654-62 ft., T.D. 6,725 ft.

Tom O'Connor, Refugio County: Quintana 31 Williams, 694 bbl., ¼-in. choke, perf. casing 5,844-54 ft., T.D. 5,925 ft.

Victoria, Victoria County: D. N. Jolly 1 Piegsa, 500 bbl. fluid, 90 per cent salt water, gas lift, T.D. 3,062 ft.

LAREDO DISTRICT

Wildcat

McMullen County: W. M. Stephenson 4 Jacob, dry, T.D. 910 ft.

Fields

Alta Mesa, Brooks County: Standard Oil Co. of Texas 21 Mestena, 156 bbl., pumping, sand 2,510-40 ft., T.D. 2,545 ft.

Colorado, Jim Hogg County: Humble 30-B King ranch, 165 bbl., 3/16-in. choke, T.D. 2,881 ft.

Driscoll, Duval County: Continental 73-A Driscoll, 338 bbl., ¼-in. choke, perf. casing 3,384-97 ft., T.D. 3,407 ft.

Government Wells, Duval County: Sun 75 Wiederkehr, 85 bbl., 3/16-in. choke, sand 2,936-40 ft.

Jacob, McMullen County: Frank Berry 6-C Clark, 8 bbl. pumping, T.D. 985 ft.

Kelsey, Starr County: Humble 1 Trevino, 112 bbl., 9/64-in. choke, T.D. 4,768 ft.

Killam, Webb County: Mim & Abel 13 Laurel, 40 bbl., pumping sand 2,012-24 ft.

Lundell, Duval County: Humble 18-B White, 11 bbl., pumping, T.D. 1,575 ft.

Peters, Duval County: Mills Bennett Prod. Co. 1-C Peters, dry, T.D. 4,004 ft.

Manila, Jim Hogg County: Achning & Daubert 1-A Woods, dry, T.D. 2,858 ft.

Rincon, Starr County: Continental 13-A Slick, 173 bbl., 3/16-in. choke, perf. casing 4,106-28 ft., T.D. 4,175 ft.

Sun, Starr County: Sun 12-B Speer, 117 bbl., ⅛-in. choke, perf. casing 4,635-40 ft., T.D. 4,667 ft.

SOUTH CENTRAL TEXAS DISTRICT

Wildcats

Bexar County: Wellington Oil Co. 1 John Schultz, dry, T.D. 1,809 ft.

Maverick County: Wellington 2 Indio Cattle Co., dry, T.D. 5,998 ft.

Williamson County: John F. Camp 1 Nelson, dry, T.D. 1,253 ft.

Fields

Chapman, Williamson County: J. W. Armstrong 1 J. C. Abbott, 4 bbl., pumping, T.D. 1,980 ft.

Gas Ridge, Bexar County: Southwest Drilling Co. 26 Covell, 1 bbl., pumping, sand 417-19 ft., T.D. 465 ft.

Southwest Drilling Co. 40 Covell, 1 bbl., pumping, sand 436-38 ft., T.D. 445 ft.

Maverick, Dimmit County: Wellington 1-B Sullivan, estimated 1,500,000 cu. ft. gas open flow, perf. casing 1,089-94 ft., T.D. 2,983 ft.

SOUTHWEST TEXAS DRILLING REPORT

Bee County: Tom Slick Jr., 1 Grissom, P. B. McEarly Sur., drilling shale 4,650 ft.

Calhoun County: Rowan & Hope 1 L. E. Steinberg, N. Cavasis Sur., Block 16, Lot 13, cored gas sand 3,338-43 ft., drilling shale 4,976 ft.

Hidalgo County: W. R. Davis 1 Jackson, Jose Felis Hinojosa grant, coring sandy shale 7,110 ft.

Jim Hogg County: Sam Cunningham 1 S. K. East, 6 mi. northeast of Randado, T. D. Crothers Sur. 36, drilling sandy shale 2,265 ft.

La Salle County: Humble 1 J. E. Bishop, A.C.H.&B. Sur. 11, 6 mi. northwest of Cotulla, drilling shale 1,046 ft.

San Patricio County: Tide Water 1 San Antonio Loan & Trust Co., 2½ mi. southwest of Sinton, cored sand oil show 5,290-5,300 ft., recovered 5,200 ft. of salt water on drill-stem test, coring sand 5,300 ft.

Zapata County: Ralph E. Fair 1 C. P. Flores, J. Cuellar Sur., coring shale 3,730 ft.

West Central Texas Fields

(Continued from Page 66)

24 and 27, Holt subd. of Henry Millard Sur. 243, fishing tools, T.D. 2,696 ft.

W. L. Snoddy 1 Huddleston, 2,150 ft. from S and 467 ft. from W lines of farm, Sec. 41, T.&P. Sur., Blk. 18, drilling 3,085 ft.

Nolan County: J. E. Farrell 1 C. W. Tipton, 467 ft. from S and W lines, Sec. 43, Blk. 19, T.&P. Sur., 5,200-ft. rotary test, drilling 2,460 ft.

Palo Pinto County: F. Guyer 1 Dalton, L. B. Dalton Sur., A-153, cleaning out, T.D. 4,008 ft.

E. Lloyd 1 C. A. Dalton, 560 ft. from S and 1,165 ft. from E lines of W. Lewis Sur., A-299, 1,500 ft. test, running 5½-in. casing, T.D. 1,474 ft.

Parker County: J. L. Higginbotham 1 J. B. Gilbert, 330 ft. from S and E lines, G.W.T.&P. Sur., A-1958, old well drilled deeper, old T.D. 3,832 ft., drilling 4,832 ft.

Shackelford County: Owenwood Pool No. 3 1 W. H. Green, 220 ft. from S and W lines, Sec. 55, T.&P. Sur., Blk. 11, 1,200-ft. cable-tool test, drilling 830 ft.

Stephens County: T. G. Shaw 1 Whalen estate, 467 ft. from N and W lines, Sec. 1089, T.E.&L. Sur., A-370, testing, T.D. 4,689 ft.

Taylor County: Lewis Producing Co. 1 J. M. Hart, 330 ft. from N and W lines of Hart farm 135-ac. tract, D. B. Corley Sur. 4, 2,800-ft. rotary test, moving in material.

Secondary Recovery Governs Future of Pennsylvania Fields

(Continued from Page 55)

Kane to Butler districts, secondary recovery methods have been applied to only a few properties in the southwestern district. Three of these have been described in a recent publication.[2] One has been in operation 7 years and has produced about 16 bbl. of oil per acre-foot. There has been no decline in the rate of production, and it is probable that twice this amount can still be produced. Two other projects have produced 66 and 100 bbl. per acre-foot respectively in 16 years without a very large decline. Wells are spaced very widely in these projects, and there are not enough input wells to act on the producing wells from more than one direction, a condition that seems essential for efficient recovery in other districts. It, therefore, seems probable that with a few more wells and a more efficient pattern far larger recoveries could have been obtained.

The unstimulated oil production of the wells in the Southwestern district averages about five times that of wells in the Middle district. This fact, plus the fact that comparatively large recoveries have been obtained from inefficient application of gas drive, suggests that the remaining oil saturation of the deeper sands in the Southwestern district is considerably greater than that of the shallower sands in the Kane to Butler district. This is perhaps explained by the fact that in most of the fields deeper than 2,000 ft. the original wells were rather widely spaced, and there has since been little new drilling.

In the lack of any core analyses, the quantity of oil remaining in the sands of the Southwestern district cannot be estimated with any degree of assurance. For the purpose of calculating the reserves of oil in that district it will be assumed that 50 bbl. per acre-foot is recoverable. From the results of gas-drive projects to date, mentioned above, it appears that this quantity is very conservative, and if there is sufficient economic incentive 100 bbl. or more per acre-foot is actually recoverable.

Geological surveys have not been made in the Southwestern district in recent years, and some of the older reports do not furnish sufficient data to estimate closely the number of acre-feet of oil sand in that district. These reports were, however, supplemented by unpublished data in the files of the Pennsylvania Geological Survey. The oil pools were divided into small areas on the basis of the depth and thickness of the "pay" sand. It should be noted here that the sand recorded as "pay" by the drillers is believed often to be less than the total thickness of oil-bearing sand. The estimates of total acre-feet are, therefore, very conservative.

In the Southwestern district there has been so little drilling for oil in recent years that no reliable estimates of the cost of producing oil by secondary recovery methods can be made. It has already been noted that the deeper sands are more richly saturated. Drilling costs increase rapidly with depth, but those projects already in operation indicate that it is not necessary to drill as many wells as in the northern districts to obtain comparable recoveries. Development cost per barrel may well be as low or lower in the deep as in the shallow-sand areas. Increased activity and the use of more modern equipment should decrease both the development and operating costs per barrel. Classification on the basis of development and operating cost per barrel, therefore, is not possible at the present time.

Since there are approximately 1,500,000 acre-ft. of oil sand in the Southwestern district, a recovery of 50 bbl. of oil per acre-foot will amount to 75,000,000 bbl. of oil.

It has been estimated that originally there were about 4,700,000,000 bbl. of oil in Pennsylvania, of which about 1,000,000,000 or 21 per cent has been produced to date. It is estimated that about 358,000,000 bbl. additional, or 8 per cent of the original oil, can be recovered. The remaining 71 per cent of the original oil rests as a challenge to the petroleum engineers and geologists of the state.

Summary.—The oil reserves of Pennsylvania are summarized in Table 4.

TABLE 4—OIL RESERVES OF PENNSYLVANIA

District—	Productive acreage	Barrels: Total oil	Barrels: Economically recoverable oil
Bradford	84,000	976,000,000	67,352,000
Kane to Butler	347,770	2,074,500,000	215,400,000
Southwestern	112,870	631,000,000	75,000,000
Total	544,640	3,681,500,000	357,752,000

The production of oil in Pennsylvania from 1859 to 1940, as estimated by the U. S. Geological Survey and U. S. Bureau of Mines, is about 1,000,000,000 bbl. Annual production figures are given in Mineral Resources of the United States and Minerals Yearbook. The production in 1940 was 17,353,000 bbl. The production by years is plotted on Fig. 2.

References

[1]Fettke, Charles R., The Bradford Oil Field (Pennsylvania and New York): Pennsylvania, Topographic and Geologic Survey, Bulletin M 21, 454 pp., 26 pls., 113 figures, 151 tables, 1938.

[2]Dickey, P. A., and Bossler, R. B., Oil Recovery by Air Drive in the Venango Fields of Pennsylvania: American Petroleum Institute, Division of Production, annual meeting, Chicago, November 13, 1940.

[3]Bossler, R. B., and Dickey, P. A., Oil Recovery by Air and Gas Drive in Pennsylvania: American Petroleum Institute, Division of Production, Eastern District, April 18, 1941.

Rocky Mountain Area

(Continued from Page 73)

Vermilion Oil 1 Government, SW NE NE 6-21n-99w, drilling 2,406 ft.

Sinclair-Wyoming 104 Lost Soldier, C SW NW 11-26n-90w, drilling 492 ft., 13⅜-in. 424 ft.

Sinclair-Wyoming 103 Lost Soldier, SE SW NW 11-26n-90w, location.

MONTANA COMPLETIONS

Fields

Cut Bank, Glacier County: Santa Rita 1 State, SW NE SE 25-33n-6w, T.D. 2,956 ft., upper Cut Bank at 2,008-18 ft. dry, no lower Cut Bank, plugged and abandoned.

Santa Rita 7 Rasmussen, CEL NW SW 33-33n-5w T.D. 2,998 ft., upper Cut Bank 2,885-2,942 ft., no lower Cut Bank, dry and abandoned.

Wilkinson & Potter 3 Tribal-126, C N½ NW 7-32n-5w, T.D. 2,882 ft., 7-in. 2,833 ft., Cut Bank sand 2,842-75 ft., main pay 2,865-75 ft., swabbed 87 bbl. first 16 hr., then shot 80 qt. at 2,865-75 ft., cleaning out.

McDonald, Henderson, Overcash 3 Tribal-190, T.D. 2,778 ft., 6¼-in. 2,740 ft., not cemented, Cut Bank sand 2,725-69 ft., main pay 2,764-69 ft., 1,200 ft. oil in hole, preparing to swab.

Cobb-Jeffries-Texas 1 fee, NE NE SE 3-35n-6w, Sunburst 2,945-71 ft., show oil 2,955-60 ft., Cut Bank 2,973-3,009 ft., main pay 3,000-9 ft., 600 ft., fluid in hole 80 per cent water, testing.

Indian Oil Co. 2 fee, C NW SW 4-34n-6w, T.D. 3,067 ft., upper Cut Bank 2,980-3,066 ft., no lower Cut Bank, 15 gal. oil, 1 bbl. water every 2 hr., plugged and abandoned.

Devon, Toole County: C. Leonard Smith 1 Lewis, NE SW NW 34-33n-2e, T.D. 770 ft., sand 750-70 ft., 350,000 cu. ft. gas, 125 lb. pressure.

Kevin-Sunburst, Toole County: High Gravity Oil Co. 3 Government, SE NE SW 18-35n-3w, T.D. 2,495 ft., 7-in. 2,397 ft., contract 2,486-95 ft., acidized 100 gal., 270 bbl. first 24 hr., 37.3 gravity.

MONTANA DRILLING REPORT

Blaine County: Independent Natural Gas 1011 Miller, SE SE SE 8-31n-19e, drilling 1,100 ft.

Carbon County: R. C. Tarrant 2 McKay, C SE NW 4-6s-18e, drilling 3,960 ft. in sandy shale, top Chugwater 3,060 ft.

Fallon County: Carter 1 Northern Pacific, C SE SW 19-4n-62w, S.D. 9,678 ft. to bury water lines and enclose rig.

Glacier County: William Hanlon 3 Tribal-196, SW NW NE 30-32n-5w, rig.

R. C. Tarrant 1 Lenoir, SW SW NW 17-31n-5w, spudded.

R. C. Jeffries 2 Tribal-197, SW SW NW 30-32n-5w, T.D. 2,948 ft., running 6¾-in.

Texas 5-B Government, C SE NW 20-32n-5w, drilling 1,135 ft., top Colorado 425 ft., 10¾-in. 454 ft.

Glacier Production 3 Barrington, C SW SE 18-33n-5w, drilling 1,100 ft., top Colorado 610 ft., 10¾-in. 670 ft.

Texas 10 State, C SW SW 16-32n-5w, rigging up.

Texas 4-A Government, CWL SE SW 17-32n-5w, building rig.

Texas 5 Bonnett, SW SE SE 7-32n-5w, location.

Santa Rita 3 Jacobson, C SE SW 7-33n-5w, location, first report.

Park County: Intermountain States Oil 1 Burgess, SE SW NW 28-2s-11e, drilling 2,760 ft.

Intermountain States Oil 1 Wolf, NE SE SW 6-3s-11e, drilling 420 ft.

Toole County: Montana-Dakota Utilities 327 Donovan, C NW SE 31-34n-1w, drilling 925 ft., 10-in. 220 ft.

Hat Oil Co. 1 Mitchell, C NE SW 24-37n-3w, standing 1,315 ft.

J. H. Agen 18 Goeddertz, CSL NE SW 23-35n-3w, rigging.

Casper T. Olen 12 Engermoen, NE SE NW 14-35n-2w, T.D. 1,570 ft., 170 ft. oil in hole, standing.

A. A. Oil Co. 1 Fey, SW SE SE 32-37n-2e, T.D. 1,010 ft., cleaning out ahead of 8¼-in.

Nepstad-Montgomery-Fargher 4 Haughen-2, CSL SW SW 2-35n-3w, T.D. 1,600 ft., ran 7-in., cleaning out.

Dakota-Montana Oil 26 Government, CNL NE NW 19-35n-1w, drilling 1,410 ft.

Gordon Plotke 4 Ward, SE SW SW 28-35n-3w, T.D. 1,719 ft., 100 ft. fluid in hole, running tubing to test.

Superior Pet. 4-A Government, C SE NW 24-35n-3w, T.D. 1,672 ft., P.B. to 1,619 ft., testing.

L. J. Yealy 17 Shaw, NE NE SW 35-36n-2w, location.

Rimrock Oil 8 Schmidt, SE SE NW 29-35n-3w, drilling 1,210 ft., 8¼-in. 1,050 ft.

J. H. Agen 5 Goeddertz, CSL SW SE 16-35n-3w, T.D. 1,812 ft., contact 1,806-12 ft., show oil, will stand until spring.

Big West Oil 1 Dahlquist, C NW 6-34n-4w, T.D. 2,228 ft., 7-in. 2,149 ft., 1,500,000 cu. ft. gas, underreaming 7-in. to top Cut Bank sand.

Welch Brothers 5 Zacher, CWL NW NE 29-35n-1w, T.D. 1,360 ft., shot in Sunburst with 30 qt., acidized 500 gal., testing.

Barmac Production 15 Maughans, SW NE NE 30-35n-1w, drilling 635 ft., 8¼-in. 233 ft.

Henry Vanderpas 5 Ward, NE NE SE 29-35n-3w, T.D. 1,748 ft., in contact, acidized 500 gal., testing.

Lion Production 4 State, C NE SE 11-35n-3w, location, first report.

NORTHWEST NEW MEXICO COMPLETIONS

Fields

Bloomfield district, San Juan County: Goodrun & Vincent 1 Bloomfield, NW NE NW 22-29n-11w, dry and abandoned at 1,025 ft.

Fulcher Basin, San Juan County: Carroll & Cornell 5 Cornell-Government, CEL NE NE 13-29n-12w, T.D. 980 ft., 40 bbl. a day average from Farmington sand, top at 940 ft.

Southern Union Production 3-B Government, C NW SE 20-29n-11w, T.D. 1,805 ft., top of Picture Cliff 1,690 ft., 1,000,000 cu. ft.

NORTHWEST NEW MEXICO DRILLING REPORT

McKinley County: Ambrosia Investors Co., Inc., 1 Santa Fe, NE NE SW 3-14n-10w, cemented 6⅝-in. 550 ft.

Petroleum Products 19 State, SW SE 36-18n-9w, T.D. 1,612 ft., casing set 1,584 ft., with packer at 1,570 ft., trying to shut off upper water, saturated Hospah sand 1,586-1,611 ft.

Petroleum Products 20 Hospah, NE NW NW 1-17n-9w, cemented casing on bottom at 1,553 ft., first report.

Petroleum Products 21 Hospah, SE NW 1-17-9w, drilling 1,550 ft., production string at 1,547 ft., first report.

Petroleum Products 22 Hospah, NE NW 1-17n-9w, rigging up, first report.

Cecil S. Ringle 1 Van Atta-Government, NW SW NE 30-20n-9w, spudded, first report, Red Mountain district.

San Juan County: George Goodrum 1 Reinhart, NE NE 21-29n-11w, drilling 275 ft., first report, Bloomfield district.

Southern Union Production 1 Ute Indian, NE NW 21-32n-14w, spudded, first report, Barker dome.

San Miguel County: Southwest Drilling, Inc., 1 Conchas, NW NE 34-17n-21e, drilling 3,600 ft. hard gray sand below granite wash.

Torrance County: Cardinal Oil 1 State, SE SW 3-8n-14e, cemented 6-in. at 1,056 ft., T.D. 1,140 ft.

Nebraska

(Continued from Page 61)

A. H. Kruger of Russell, Kans., is drilling south of Dawson. His test will be a west offset to Albin 1 Powers. Only two producers are in the pool to date. Johnson and Short had a dry hole at 1 Dowell, northwest of Salem, Neb.

The Ohio Oil Co. is busy at three operations on its Bucholz lease. One is the eleventh Bucholz well.

NEBRASKA COMPLETIONS

Fields

Barada, Richardson County: Skelly 1 Merz, E½ NE NE 35-3n-16e, Hunton 2,438 ft., cemented pipe, oil leaked and filled hole 2,275 ft., completed without perforating casing.

Skelly 1 Steinbrink, E½ SE NW 36-3n-16e, pumped 30 bbl. oil per hour for 6 hr.

Falls City, Richardson County: Towle & Isaacks 1 Towle Realty, SW SW 19-1n-16e, Hunton 2,542 ft., T.D. 2,642 ft., dry.

Wildcats

Richardson County: Johnson & 1 Eugene Dowell, NW NE 31-2n-15e, Hunton 2,648 ft., T.D. 2,800 ft., dry.

Kentucky Fields

(Continued from Page 64)

Skillman Station district: O. D. Vickers 1 Wm. Hagman, dry, T.D. 546 ft.

Muhlenberg County

Belton district: Stewart et al 2 James McPherson, 500,000 cu. ft. gas, T.D. 696 ft.

Weir district: C. D. Lambert et al 1 D. M. Crick, abandoned location.

Ohio County

Fordsville district: John Tuttle et al 3 Grace Miles, 20 bbl., shot 60 qt., Jett sand, 226-43 ft., T.D. 267 ft.

Pleasant Ridge district: M & W Oil Co. 4 Addie Westerfield, dry, T.D. 905 ft.

Union County

Morganfield district: Sun Oil and Ky. Natural Gas 1 Sloan McKinney, pumped 75 bbl., T.D. 1,350½ ft.

Sun Oil and Ky. Natural 3 J. W. Reburn, dry hole, T.D. 1,412 ft., to drill deeper.

Sun Oil and Ky. Natural et al 1 T. Sample, dry, T.D. 2,525 ft.

Three miles east of Sturgis: Joe Sullinger 1 I. D. Winston, abandoned location.

MISSISSIPPI AND SOUTHEAST

Three Locations Are Staked Around Eutaw Sand Strike

By R. MARNE SANFORD

JACKSON, Miss., Dec. 15.—Although the discovery well was still not officially completed, three new locations for offset tests were staked last week in the Pickens-Sharpsburg area just southeast of the old shallow Pickens field. Even a new loading rack is being built to handle the anticipated oil from this new field.

The discovery well was Buzz Morgan 1 Johnny, NW SW 4-11n-3e, 2 miles southeast of the Pickens field. The hole is bottomed at 5,663 ft. with casing perforations from 4,824-33 ft. opposite the Eutaw formation. In tests last week the well was swabbed for 5½ hours then turned into the pits to flow natural for ½ hour. The flow showed 108 bbl. of oil the first 3 hours through 1-in. choke under casing pressures of 118 lb. and tubing pressure of only 40 lb.

The following 12-hour period the well flowed 427 bbl. through a ½-in. choke under pressure of 135 lb. on the tubing and 120 lb. on the casing. It then flowed 27.7 bbl. hourly through ¼-in. choke with pressures at 140 lb. and 250 lb. on the tubing and casing, respectively. The last gage showed a flow of 11 bbl. per hour through ⅛-in. choke under pressure of 410 lb. on casing and 235 lb. on tubing. The fluid showed about 12 per cent b.s.&w. but it treated out to be all salt water. The oil was 39 gravity at 71°.

The exact source of the salt water is not yet known but it is believed to be coming from some place other than the oil producing stratum. This new field opener, the most promising since the discovery well of the Tinsley field, first showed oil from the shallow level which produces in the Pickens field. It was carried deeper and opened the productive zone some 48 ft. in the Eutaw formation.

The discovery reported the top of the Wilcox at 1,206 ft., Midway 3,056 ft., Clayton 3,810 ft., Selma 3,840 ft., Eutaw 4,778 ft., and base of the Wilburn at 4,899 ft. The well was drilled on an 80-acre tract farmed out to Buzz Morgan by Carter Oil Co., with Phillips Petroleum Co. taking over the remainder of the acreage in the large block.

Phillips Petroleum has staked offsets to the discovery to the north, south and southeast, with the southeast offset being prepared for first drilling. It is located in the SW SE Section 4-11n-3e.

To handle anticipated amounts of oil from the new area, Allied Pipe Line Corp. has announced it will construct a new 10-car loading rack at Vaughan, Miss., to augment its present 10-car rack at this point. Oil from the new field is expected to be more than can be handled by the present 10-car rack, which also moves Pickens field oil.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Tinsley ..	8	3,175	30,644

LEGAL

Department of the Interior, United States Land Office, Cheyenne Wyoming. Notice is hereby given that the oil and gas deposits in the following tracts are offered to the responsible qualified bidder of the highest bonus per acre for leasing, pursuant to the provisions of Section 17 of the act of February 25, 1920 (41 Stat. 437) as amended by the act of August 21, 1935 (49 Stat. 674) at the royalty rate scale in the lease form shown in Circular 1386, at a sale to be held in this office at 10:00 A.M., on January 22, 1942: South Oregon Basin field—Parcel No. 1, N½ N½ Sec. 5, T. 50 N., R. 100 W., 6th P.M., 161.50 acres; Parcel No. 2, W½ W½ Sec. 33, 160 acres; No. 3, NE¼ Sec. 32, 160 acres; No. 4, SE¼ Sec. 29, 160 acres; No. 5, SW¼ NE¼, S½ NW¼ Sec. 29, 120 acres; No. 6 SE¼ SW¼ Sec. 30, E½ NW¼ Sec. 31, 120 acres, all in T. 51 N., R. 100 W., 6th P.M.; North Oregon Basin Field—Parcel No. 7, SE¼ SE¼ Sec. 7, T. 51 N., R. 100 W., 6th P.M., 40 acres. The successful bidder must deposit on the date of sale with the Register, a certified check on a solvent bank, or cash, for one-fifth of the amount bid by him and file a showing of qualifications to receive a lease required by Section 7 of Circular 1386. The remaining four-fifths of the amount of the bid, together with the annual rental at the rate of $1.00 per acre must be paid, and a $5000 corporate surety bond furnished prior to the issuance of the lease. Bidders are warned against violations of the provisions of Section 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Register.

Geophysical Work Active

A survey of the Mississippi and southeast area the past week revealed that there are a total of 29 prospecting units at work. Of this number there are 14 seismograph units working in Mississippi, 9 gravity meter units and one magnetometer group. In Florida there are 2 gravity meter crews and 3 magnetometer groups. There are no active units in the State of Alabama.

MISSISSIPPI COMPLETIONS

Fields

Tinsley, Yazoo County: V. P. Evans 8 Dalzell Johnson, SE NE NW 13-10n-2w, total depth 5,038 ft., Woodruff 4,935-54 ft., pumped 15 bbl. hourly.

Hassie Hunt 7 M. Sorrells, SW NE NE 31-10n-2w, total depth 4,990 ft., Woodruff 4,974 ft., pumped 28 bbl. hr.

E. C. Johnston 2 Martin, NW. E¼ 2-9n-3w, total depth 4,965 ft., Woodruff 4,937 ft., pumped 27 bbl. hourly.

M. Carl Jones 4 Walker, SE NW NE 2-9n-3w, total depth 4,944 ft., Woodruff 4,929-44 ft., pumped 405 bbl. daily.

Sinclair Wyoming Oil 2 F. A. McGraw, S½ SE NW 36-11n-3w, total depth 5,900 ft., Woodruff 4,914 ft., Perry sand 5,360 ft., Slick sand 5,430 ft., McGraw sand 5,834 ft., water 5,860 ft., 7-in. casing 5,899 ft., perf. 5,834-46 ft., flower 390 bbl. in 19 hr., from the McGraw horizon.

Snowden & McSweeney 6 Ben Hanley, NE SW SE 35-10n-3w, total depth 4,807 ft., Woodruff 4,790-99 ft., pumped 25 bbl. hr.

CANADIAN FIELDS

Northernmost Turner Valley Well Is Field's Largest

By VICTOR LAURISTON

CHATHAM, Ont., Dec. 15.—In North Turner Valley, Major Oils 3, LSD 1, 8-21-3w5, the most northerly producer in the field, finished at 8,120 ft. with Madison at 7,655 ft., is definitely the largest producer in the field. It has been operating on temporary allowables of 748 bbl. daily for November and 900 bbl. daily for December. The December quota has now been increased to 1,165 bbl. daily, and a retroactive allowable for November set at 1,192 bbl. daily, meaning that Major 3 is permitted to produce up to 1,609 bbl. daily this month.

Alberta Monthly Production Report Shows Decline

Crude production in Alberta in October totaled 828,352 bbl., or 26,721 bbl. daily, a decrease of 1,022 bbl. daily from September but an increase of 1,650 bbl. daily over October 1940. This was supplemented by natural-gasoline recoveries by Turner Valley absorption plants of 25,248 bbl., or 814 bbl. daily, an increase of 31 bbl. daily over September and 105 bbl. daily over October 1940. These figures are exclusive of oil recovered from the tar sands of northern Alberta.

The October production included 816,839 bbl. of limestone crude, 1,820 bbl. of naphtha and 495 bbl. of shallow crude from Turner Valley; Red Coulee light crude, 991 bbl.; Wainwright heavy crude, 1,302 bbl.; Del Bonita light crude, 1,167 bbl.; Steveville Princess light crude, 3,109 bbl.; Taber medium crude, 460 bbl., and Vermilion heavy crude, 2,164 bbl. There were 208 producing wells in Turner Valley and 21 in outside fields.

In the tar-sand area at McMurray, in northern Alberta, 2,897 tons of oil sand were mined, producing 2,591 bbl. of crude, 73 bbl. gasoline and 711 bbl. of diesel and burner oil.

Among Turner Valley crude wells in October, the largest producer was Major Oils 2, with 31,288 bbl.; others being Miracle Royalties 1, with 28,092 bbl.; Ace Royalties 1, with 25,498 bbl.; Home Oil 7, with 23,040 bbl.; Home Oil 2, with 21,112 bbl., and Northwest-Hudson's Bay 6, with 18,687 bbl. All except the last named are in North Turner Valley.

Natural-Gas Production Is Up

Natural-gas production from Alberta totaled 5,071,578,000 cu. ft. in October, or 163,599,000 cu. ft. daily, an increase of 5,499,000 cu. ft. over September and 6,326,000 cu. ft. over October 1940. The October total production included 1,359,703,000 cu. ft. from 70 gas wells and 3,020,277,000 cu. ft. from 168 crude wells in Turner Valley; 383,740,000 cu. ft. from 17 wells in the Viking-Kinsella field; 261,212,000 cu. ft. from 43 wells in the Medicine Hat-Redcliff field and 46,646,000 cu. ft. from 20 wells in other fields. A daily average of 92,246,000 cu. ft. gas burned or blown to air, chiefly in Turner Valley, where 2,911,869,000 cu. ft., or 93,951,000 cu. ft. daily, was processed to produce 25,248 bbl. of natural gasoline.

Crude petroleum stocks in Alberta as of November 1 totaled 380,841 bbl., a decrease of 18,042 bbl. from the previous month and an increase of 21,915 bbl. over November 1, 1940. Refined petroleum stocks as of October 1 amounted to 861,582 bbl., 42,454 bbl. less than on October 1 and 218,094 bbl. less than October 1, 1940.

Turner Valley limestone oil wells had an average gas-oil ratio of 3,700 cu. ft. per barrel in October compared with 3,770 cu. ft. in September and 3,940 cu. ft. in October 1940. The lower average was due to completion of a number of large new producers with low gas-oil ratios.

Weekly Production Report Down Slightly

Crude production from all Alberta fields for the week ending December 1 averaged 28,411 bbl. daily, compared with 28,799 bbl. daily for the previous week and 28,414 bbl. daily for the corresponding week last year. The daily output included 27,300 bbl. of crude and 814 bbl. of natural gasoline from Turner Valley and 297 bbl. of crude from outside fields. There were 194 crude producers, 36 drilling, 8 testing, 1 finished, 1 shut down, 3 spudded and 1 resuming.

TURNER VALLEY LIME TESTS

North Turner Valley: Royalite Oil 58, LSD 7, 22-20-3w5, T.D. 7,787 ft., Madison at 7,220 ft., temporary allowable 504 bbl. daily.

Home Oil 9, LSD 9, 15-20-3w5, T.D. 8,478 ft., Madison at 7,974 ft., reacidizing to increase production from tight limestone.

Royalite Oil 60, LSD 5, 14-20-3w5, finishing below 8,153 ft., Madison at 7,703 ft.

West-Central Section: Okalta Oil 11, LSD 10, 24-19-3w5, T.D. 8,220 ft., Madison at 7,752 ft., completed as fair producer.

United-British American 1, LSD 16, 12-19-3w5, T.D. 8,418 ft., Madison at 7,945 ft., acidizing and testing.

Southwest Petroleum 6, LSD 5, 8-19-2w5, below 6,846 ft., Madison at 6,562 ft.

Drillers & Producers 1, LSD 13, 7-19-2w5, T.D. 8,042 ft., Madison at 7,599 ft., acidizing and testing.

Alberta Pacific Royalties 1, LSD 14, 6-19-2w5, T.D. 8,334 ft., Madison at 7,872 ft., acidizing and testing.

NEW TESTS STARTING

North Turner Valley: Ace Royalties 2, LSD 10, 22-22-4w5, spudded and below 310 ft.

Major Oils 10, LSD 16, 15-22-4w5, spudded and below 246 ft.

Major Oils 5, LSD 14, 35-21-4w5, spudded and below 125 ft.

OUTSIDE FIELDS

Clearwater: Ram River Oils 2, 1-37-11w5, below 3,300 ft., Devonian limestone.

Grease Creek: Grease Creek-Northwest 2, LSD 7, 13-29-7w5, below 3,432 ft.

Brooks: Northwest Co. 1, LSD 16, 20-18-14w4, T.D. 3,391 ft., cemented in Madison limestone, finishing production test, commercial gasser indicated.

Del Bonita: Del Bonita Associated, T.D. around 3,300 ft., Madison limestone, acidizing and testing.

Sarcee Reserve: Calmont Oils is dismantling cable tools and will rig rotary for Inland-Sarcee 1, LSD 2, 4-23-4w5, to resume from 1,300 ft.

Steveville: Standard of British Columbia 6 Princess, LSD 5, 27-20-12w4, T.D. 3,190 ft., cementing casing to test oil shows.

New Test Near Tilley Started

Following completion of its Brooks well as a commercial gasser, Northwest Co., subsidiary of Imperial Oil, has spotted a new test in 18-17-12w4, near Tilley. Location is 16 miles southwest of Brooks and test will spud as soon as the outfit from Brooks is available. The

(Continued on Page 95)

PIPE LINE REPAIR CLAMPS
Efficient—Economical More than 45,000 sold

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MADE WITH 1 OR 2 U-BOLTS
In Stock for Immediate Shipment
BROWN & BROWN, Incorporated
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Operators Dissatisfied With 3-Cent Crude Raise

THE advance of 3 cents per barrel authorized in 17 North and North Central Texas producing counties and immediately posted as of December 11 by most purchasers in that district failed to fully satisfy operators. Protests were wired to Leon Henderson, director of the Office of Price Administration, who authorized the increase, that the full differential of 7 cents existing previously between North Texas and other Mid-Continent crude prices should have been approved.

In authorizing the upward adjustment in North Texas, Mr. Henderson pointed out that this action was not indicative of the OPA policy on general crude prices. He said that the general price situation is being studied on a nation-wide basis by the U. S. Tariff Commission.

Counties in which the 3-cent advance was authorized include Archer, Baylor, Brown, Callahan, Clay, Coleman, Cooke, Eastland, Foard, Jack, Montague, Palo Pinto, Shackelford, Stephens, Wichita, Wilbarger and Young.

Stanolind Oil Purchasing Co., buyer of about 20,000 bbl. of crude daily in North Texas, was the first to revive its scale of posted prices in accordance with the OPA authorization. The company's North Texas posting ranges from 81 cents for crude below 21° gravity upward at increments of 2 cents per degree of gravity to a top of $1.21 for 40° gravity and above.

Sinclair Prairie Oil Marketing Co., Continental Oil Co., Magnolia Petroleum Co., Bell Oil and Gas Co., and Panhandle Refining Co., were among purchasers to meet the advance.

"This action was taken after a study of transportation costs and other factors affecting marketing of crude oil and products from the two areas," Mr. Henderson explained. "In recent years the volume of production in North and North Central Texas has increased to the point where a substantial volume of crude oil from those areas is moving both northward and southward to distant refineries. Formerly, crude oil produced in those areas was largely refined locally.

"Concurrent with this change in conditions," he added, "there has been a relative decline in Oklahoma crude-oil production while demand has been increasing for products and crude oil from both of these areas. A narrowing of the existing price differential takes cognizance of these developments in the relative positions of Oklahoma and North and North Central Texas."

Mr. Henderson's order followed the voluntary withdrawal on November 11, by three large purchasers of North and North Central Texas crude, of a move to eliminate completely the differential which had been made without prior approval by OPA.

Earlier, Shell Oil Co. Inc., and other purchasers in certain southern Oklahoma fields adjusted their schedules eliminating the differential of 5 cents per barrel as compared with other Oklahoma and Kansas crudes. Shell made its Carter County, Oklahoma adjustment on December 5, placing all Oklahoma and Kansas crudes on the regular Mid-Continent gravity table which ranges up to $1.25 per barrel for 40° gravity crude.

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Blackout Test Planned for East Texas Oil Field

THE civilian population of the several towns in the great East Texas oil field last week held a mass meeting to ask Gov. Coke R. Stevenson to designate the field as a defense area and to aid in speeding measures for its protection against possible attack. Plans were being rounded into shape for a test blackout which would darken four oil-field towns: Kilgore, Longview, Gladewater and Henderson, as well as oil-field lights and well flares.

The mass meeting was convoked by Glenn Kincaid, president of the Gladewater Defense Council, to draft a comprehensive program for guarding the vital points, the fighting of oil-field fires, and the training of first-aid and damage-repair workers. Even now after 10 days of the new war with Japan, most oil companies in the East Texas field were operating behind locked gates with guards patrolling the grounds on a 24-hour basis. All persons have been warned of the danger of trespassing or prowling, especially at night, on leases or any other oil-field property.

One of the primary steps toward the East Texas field defense program was the organization of a company of East Texas guards with headquarters at Longview. A four-man committee has been sent to Austin asking the governor to appoint regular National Guard officers to lead the company. As for the actual blackout provisions, it is reported that air-raid wardens have already been appointed and more are being recruited. The night lights of the four above-mentioned towns outline the giant field, and the refinery and field-office lights of the companies, as well as well flares, are visible for miles.

Sam Dorfman, president of the Louisiana Iron & Supply Co., Longview, has reported the raising of $1,000 in voluntary contributions from the business men of Longview toward the equipping of the defense company being organized in the field. He has set a goal of $2,000 and expects contributions to exceed this sum. The money will be turned over to the company under the command of Capt. A. V. Goyne to purchase rifles, pistols, bayonets, ammunition, clothing and other materials for the guards, both actual national guardsmen and civilian recruits.

The giant East Texas field embraces some 26,000 producing oil wells covering about 120 sq. miles and the daily production is nearly 370,000 bbl. of crude oil. A blanket appeal to all oil men and oil producers and operators in the field is being made seeking full cooperation on the proposed defense measures.

Axis Powers Control But Four Per Cent of World's Oil

(Continued from Page 13)

with the industry's largest single refinery located at Abadan. Oil operations in India are British-controlled.

Netherlands Interests

Netherlands oil interests come largely from the operations of the Royal Dutch-Shell, whose official headquarters are now located at Curacao in the Netherlands West Indies, with a large part of the company's oil operations allied with those of Great Britain and now directed from London and this country. British, Dutch, American and French interests own the Iraq production, the only country where output has been substantially reduced due to war developments. American, Netherlands and British companies operate the important production of the East Indies, whose acquisition is an immediate objective of Japan. The Netherlands West Indies are the home of two of the world's largest refineries, whose operations absorb a large part of the crude-oil production of Venezuela, which now ranks second among the oil-producing nations.

The position of the Allies in oil transportation is as strong as it is in other divisions of petroleum operations. Most of the world's tankers are chartered by the four powers, which have also taken over other transportation units of countries which are now under Axis control.

Soviet Union

The oil operations of the Soviet Union are confined to that country and their development has had little effect on the petroleum industry generally. Before the war started her exports of petroleum had decreased to a few thousand barrels daily and these were partially offset with imports to Siberia, largely coming from the United States. The primary objective of the government has been to expand production to take care of military requirements and the needs of an expanding domestic economy. With the declaration of war against Germany imports of aviation gasoline and other products from the United States increased. The entry of Japan into the war has stopped these shipments.

The Soviet Union plan for 1941 called for an average crude-oil production in excess of 700,000 bbl. daily but present production is under that figure. The Axis invasion has disrupted some of the country's oil-transportation facilities but so far as known there has been no serious damage to the principal fields and refineries.

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Asphalt Producers Asked to Hold Prices at Jan. 1, 1941, Level

Manufacturers of asphalt are being asked by the Office of Price Administration not to write contracts for 1942 sales at prices higher than those in contracts signed January 1, 1941, Leon Henderson, administrator, announced last week.

Likewise, the manufacturers are being asked not to make open-market sales at prices higher than the January 1, 1941, contract-market prices. The letter embodying these requests is now being prepared and will be sent out shortly to more than a hundred manufacturers.

Along the eastern seaboard the open-market price on one principal grade of asphalt rose during 1941 from around $13 a ton to as much as $15 and there have been requests received by OPA for additional increases.

Summary of Operations, All Fields, November

SUMMARY OF OPERATIONS

District—	Comp.	Oil	Prod.	Gas	Dry	Completions Under 1,000 ft.	1,000-2,500 ft.	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Footage	Drilling
Appalachian	557	419	915	113	25	20	430	95	12	0	1,198,514	697
Ohio	180	53	1,940	74	53	57	53	68	2	0	372,108	251
Indiana	49	18	1,199	7	24	13	30	6	0	0	71,309	80
E. Kentucky	28	5	42	18	5	6	12	10	0	0	60,225	102
W. Kentucky	30	14	363	2	14	20	10	0	0	0	25,463	41
Michigan	108	67	112,675	16	25	6	58	44	0	0	231,616	170
Illinois	332	250	64,491	1	81	15	139	178	0	0	890,034	388
Kansas	152	94	103,469	6	52	6	27	118	1	0	494,331	243
Nebraska	8	3	1,051	0	5	0	4	4	0	0	22,801	21
Missouri, Iowa	2	0	0	0	2	0	1	1	0	0	5,628	0
Oklahoma	124	80	13,557	12	32	13	31	66	14	0	387,779	336
North Texas	192	132	24,673	2	58	45	72	62	13	0	472,737	185
W. Central Texas	63	24	3,195	2	37	18	26	17	2	0	129,210	82
N. West Texas	133	124	115,989	0	9	1	8	27	97	0	637,833	156
S. West Texas	98	84	53,907	1	13	5	12	68	13	0	379,427	158
Texas Panhandle	88	74	15,193	12	2	0	4	84	0	0	264,841	74
E. Texas	70	52	12,400	4	14	0	1	46	23	0	350,687	87
E. Texas Border	4	1	78	0	3	0	2	2	0	0	10,007	10
Upper Gulf Coast	97	77	14,897	5	15	0	0	17	79	1	600,976	116
Lower Gulf Coast	56	39	5,689	5	12	0	0	11	45	0	339,189	97
S. Central Texas	10	7	145	0	3	4	4	2	0	0	18,923	47
South Texas	58	35	4,633	3	20	0	15	36	7	0	201,282	78
Southeast New Mexico	23	18	1,962	0	5	4	2	17	0	0	73,498	66
Arkansas	14	6	2,209	4	4	0	1	7	6	0	84,819	30
North Louisiana	69	38	3,647	9	22	3	30	24	12	0	215,707	89
Louisiana Gulf	69	47	12,430	2	20	2	4	8	30	25	553,684	151
Mississippi	24	19	11,329	0	5	0	0	15	8	1	124,874	30
Alabama	1	0	0	0	1	1	0	0	0	0	280	2
Georgia	0	0	0	0	0	0	0	0	0	0	0	2
Montana	18	10	1,165	5	3	3	4	11	0	0	40,703	98
Wyoming	17	13	1,939	1	3	1	6	10	0	0	48,572	63
Colorado	3	0	0	1	2	0	1	2	0	0	7,938	41
Utah	0	0	0	0	0	0	0	0	0	0	0	7
Northwest New Mexico	1	1	50	0	0	0	1	0	0	0	1,702	10
California	116	96	60,492	4	16	1	17	50	38	10	609,722	174
Florida	0	0	0	0	0	0	0	0	0	0	0	1
Total November	2,794	1,900	645,724	309	585	244	1,005	1,106	402	37	8,926,417	4,183
Total October	2,973	2,041	624,742	287	645	255	1,091	1,179	418	30	9,364,408	4,169
Difference	179	141	20,982	22	60	11	86	73	16	7	437,991	14

APPALACHIAN

	Comp.	Oil	Prod.	Gas	Dry	Dlg.
Bradford	242	243	89	0	0	205
Allegany	134	134	98	0	0	101
N. Oriskany	4	0	0	2	2	5
Middle dist.	24	17	21	5	2	17
Butler-Armstrong	3	0	0	3	0	10
SW Penna.	52	3	14	39	10	98
W. Virginia	97	22	693	64	11	261
Ttl. Nov.	557	419	915	113	25	697
Ttl. Oct.	586	462	673	97	27	723
Difference	29	43	242	16	2	26

OHIO

Ashland	5	0	0	2	3	4
Athens	10	1	8	4	5	14
Belmont	1	0	0	0	1	1
Coshocton	2	1	40	0	1	7
Cuyahoga	3	0	0	2	1	2
Fairfield	1	0	0	1	0	2
Gallia	2	0	0	2	0	2
Guernsey	1	0	0	0	1	4
Harrison	2	0	0	0	2	2
Holmes	1	0	0	0	1	5
Jefferson	1	0	0	0	1	1
Knox	9	1	1	5	3	12
Lawrence	2	0	0	2	0	3
Licking	22	4	18	12	6	18
Lorain	3	0	0	0	3	5
Medina	27	16	160	5	6	14
Meigs	12	1	30	8	3	15
Monroe	11	5	38	4	2	14
Morgan	1	0	0	1	0	13
Muskingum	9	1	19	7	1	19
Noble	12	5	10	4	3	12
Perry	17	10	1,591	4	3	18
Putnam	1	1	5	0	0	0
Stark	1	0	0	1	0	9
Summit	1	0	0	1	0	6
Tuscarawas	4	0	0	1	3	8
Vinton	2	0	0	1	1	2
Washington	12	6	15	5	1	25
Wayne	3	0	0	2	1	4
Wood	1	1	5	0	0	2
Wyandot	1	0	0	0	1	1
Miscellaneous	0	0	0	0	0	7
Ttl. Nov.	*180	53	1,940	74	53	251
Ttl. Oct.	148	37	951	73	38	285
Difference	32	16	989	1	15	14

*Includes seven input wells.

EASTERN KENTUCKY

Pike County	6	0	0	3	3	37
Knott	8	0	0	7	1	17
Floyd	4	1	20	3	0	22
Martin	3	0	0	3	0	15
Johnson	3	0	0	2	1	7
Lee	2	2	11	0	0	1
Elliott	0	0	0	0	0	2
Magoffin	1	1	1	0	0	1
Powell	1	1	10	0	0	0
Ttl. Nov.	28	5	42	18	5	102
Ttl. Oct.	32	7	64	22	3	115
Difference	4	2	22	4	2	13

WESTERN KENTUCKY

Breckinridge	0	0	0	0	0	1
Butler	0	0	0	0	0	1
Daviess	11	5	230	1	5	7
Hancock	2	1	5	0	1	4
Henderson	4	4	23	0	0	3
Hopkins	0	0	0	0	0	1
McCracken	0	0	0	0	0	1
McLean	0	0	0	0	0	2
Muhlenberg	2	0	0	0	2	3
Ohio	10	4	105	1	5	8
Todd	0	0	0	0	0	1
Union	0	0	0	0	0	7
Webster	1	0	0	0	1	1
Ttl. Nov.	30	14	363	2	14	40
Ttl. Oct.	30	13	1,146	1	16	41
Difference	0	1	783	1	2	1

INDIANA

Bowman	1	1	12	0	0	0
Bufkin South	5	3	68	0	2	3
Enterprise	1	0	0	0	1	1
Griffin	5	5	471	0	0	12
Hatfield	2	1	100	0	1	5
Hazleton	1	1	100	0	0	3
Heusler	1	1	100	0	0	3
Merom and Raley	1	0	0	0	1	0
New Harmony	2	2	196	0	0	3
Oatsville	1	1	4	0	0	0
St. Francesville	1	0	0	0	1	0
St. Wendells	2	1	20	0	1	0
Shelburn	1	0	0	0	1	0
Sullivan	1	0	0	0	1	0
Trenton	5	0	0	5	0	6
Wildcats	17	2	128	1	14	26
Miscellaneous	2	0	0	1	1	18
Ttl. Nov.	49	18	1,199	7	24	80
Ttl. Oct.	47	21	1,422	5	21	71
Difference	2	3	223	2	3	9

MICHIGAN

Allegan	17	12	2,269	0	5	20
Antrim	1	0	0	0	1	0
Arenac	7	4	5,004	1	2	9
Bay	4	4	656	0	0	7
Clare	16	4	2,038	9	3	10
Clinton	1	0	0	0	1	1
Isabella	5	1	600	2	2	6
Kent	1	1	35	0	0	2
Lake	3	1	680	0	2	3
Midland	1	1	50	0	0	1
Montcalm	2	0	0	1	1	2
Newaygo	1	0	0	0	1	0
Osceola	27	21	89,150	3	3	36
Ottawa	1	0	0	0	1	4
Roscommon	2	2	11,304	0	0	12
Tuscola	1	0	0	0	1	5
Van Buren	18	16	888	0	2	15
Miscel.	0	0	0	0	0	37
Ttl. Nov.	108	67	112,675	16	25	170
Ttl. Oct.	77	46	84,986	8	23	168
Difference	31	21	27,689	8	2	2

ILLINOIS

Albion	2	2	273	0	0	0
Allendale	6	4	100	0	2	6
Benton	4	4	710	0	0	3
Bridgeport	1	1	140	0	0	2
Burnt Prairie	1	1	46	0	0	0
Carlinville North	2	2	36	0	0	0
Centerville East	1	1	15	0	0	2
Clay City	10	8	823	0	2	5
Dale	16	15	2,432	0	1	9
Dundas	8	5	1,716	0	3	9
Dupo	1	1	130	0	0	0
East Patoka	3	2	72	0	1	0
Fairfield	2	2	515	0	0	0
Grayville West	1	0	0	0	1	0
Griffin	6	6	702	0	0	5
Golden Gate	1	0	0	0	1	0
Hoodville	2	2	126	0	0	2
Inman	2	2	150	0	0	1
Inman East	2	1	50	0	1	1
Irvington	1	1	40	0	0	0
Johnsonville	45	42	19,627	0	3	37
Keensburg	1	1	298	0	0	2
Louden	8	8	1,444	0	0	9
Mill Shoals	13	10	3,075	0	3	11
Mt. Carmel	8	6	739	1	1	3
New Harmony	24	24	3,399	0	0	32
New Haven	2	2	120	0	0	1
N. Benton	5	2	216	0	3	4
N. Boos	7	7	1,375	0	0	3
N. Noble	1	1	69	0	0	2
Omaha	1	0	0	0	1	0
Parkersburg	7	7	10,199	0	0	6
Rising Sun	3	3	347	0	0	2
Roland	13	12	1,664	0	1	12
Rural Hill	33	33	13,823	0	0	55
Sailor Spgs.	1	1	23	0	0	4
St. Francesville, E.	1	1	24	0	0	1
S. Lawrence	3	2	203	0	1	0
Storms	2	2	47	0	0	0
Walpole	4	3	957	0	1	5
W Centralia	4	2	265	0	2	1
Westfield	1	0	0	0	1	2
Woburn	1	0	0	0	1	1
Woodlawn	11	10	1,302	0	1	13
Wildcats	61	11	2,200	0	50	98
Miscel.	0	0	0	0	0	39
Ttl. Nov.	332	250	64,491	1	81	388
Ttl. Oct.	326	249	92,865	2	75	393
Difference	6	1	28,374	1	6	5

KANSAS

Ainsworth and NW	3	3	3,502	0	0	4
Beaver	2	1	150	0	1	1
Beaumont	1	0	0	1	0	2
Bedford	1	1	3,000	0	0	1
Bemis	4	3	6,360	0	1	4
Big Creek, S	1	1	356	0	0	2
Bloomer	2	2	1,246	0	0	2
Brandt	1	1	80	0	0	2
Burnett	1	1	623	0	0	2
Chase	3	2	2,757	0	1	4
Coralena	3	3	2,876	0	0	0
Cunningham	2	1	2,640	0	1	2
Davidson	2	2	742	0	0	1
Dayton	1	1	142	0	0	1
Donovan	1	0	0	0	1	1
Dubuque	1	0	0	0	1	0
Dunbar	1	0	0	0	1	0
Edwards	1	1	516	0	0	1
Feltes	1	0	0	0	1	0
Forest Hills	1	1	1,536	0	0	1
Frog Hollow and E	3	3	1,710	0	0	3
Geneseo	2	1	3,000	0	1	2
Gettysburg	*1	1	71	0	0	0
Gibson	1	1	297	0	0	0
Goodrich	1	1	228	0	0	0
Gorham	1	1	1,520	0	0	0
Graber	1	1	404	0	0	2
Greenvale	3	3	3,675	0	0	7
Hall-Gurney	7	7	5,765	0	0	13
Haverhill	1	1	40	0	0	1
Hewitt	1	0	0	0	1	0
Keesling	3	3	412	0	0	2
Kraft-Prusa	5	4	9,654	0	1	9
Krier	2	2	431	0	0	2
Laton	2	1	116	0	1	1
Lost Springs	4	3	1,409	0	1	5
Macksville	1	0	0	0	1	0
McLouth	6	0	0	3	3	14
Moore	1	1	150	0	0	0
Pawnee Rock	2	1	50	0	1	2
E. Pawnee	*1	1	194	0	0	1
Peace Creek	4	3	9,000	0	1	5
Rattlesnake	1	0	0	0	1	0
Ray	3	3	5,263	0	0	5
Raymond	1	1	3,000	0	0	3
Rickard	1	1	390	0	0	0
Ritz	1	1	25	0	0	1
Seeley-Wick	1	0	0	0	1	0
Severy	2	1	6	0	1	3
Silica dist.	9	6	7,406	0	3	1
Smokey Hill	1	0	0	0	1	0
Stafford	3	3	9,000	0	0	3
Stoltenberg	5	4	3,963	0	1	4
Sugarloaf	1	0	0	0	1	0
Trapp & W.	3	1	2,007	0	2	13
Vaughn	1	1	1,219	0	0	0
Virgil	2	1	12	0	1	0
Walters	1	1	311	0	0	0
Wherry	1	0	0	0	1	1
Zenith	6	5	6,017	0	1	6
Miscel.	2	1	45	0	1	55
Wildcats	21	*1	153	*2	18	48
Ttl. Nov.	152	94	103,469	6	52	243
Ttl. Oct.	146	82	78,343	9	55	237
Difference	6	12	25,126	3	3	6

*Discoveries.

NEBRASKA

Barada	1	1	480	0	0	4
Falls City	1	1	500	0	0	1
Ogle	1	1	71	0	0	0
Shubert	2	0	0	0	2	0
Wildcats	3	0	0	0	3	16
Ttl. Nov.	8	3	1,051	0	5	21
Ttl. Oct.	3	2	930	0	1	9
Difference	5	1	121	0	4	12

OKLAHOMA

Allen	1	1	10	0	0	0
Apache	0	0	0	0	0	11
N. Bebee	1	1	213	0	0	1
Burbank	1	1	150	0	0	1
N. Bristow	1	*1	55	0	0	1
Cement	3	2	1,115	1	0	7
E. Cromwell	7	6	3,427	0	1	8
Cumberland	4	4	1,055	0	0	3
W. Davenport	2	2	126	0	0	2
Depew (ext.)	2	2	157	0	0	1
Dilworth	1	1	110	0	0	3
Earlsboro & E & S	1	1	38	0	0	5
W. Earlsboro	1	1	100	0	0	2
Empire	2	1	5	0	1	3
Guthrie	3	3	594	0	0	2
W. Hewitt	2	2	334	0	0	12
Hobart	1	1	83	0	0	1
Hotulke and W.	6	5	1,383	0	1	14
Isom Springs	1	1	25	0	0	1
S. Konawa	0	0	0	0	0	6
Little River	1	1	35	0	0	1
W. Loco	2	1	20	0	1	4
Lovell	1	0	0	1	0	0
S. Maud	2	1	103	0	1	0
Okemah dist.	2	1	15	*1	0	1
Okla. City	2	2	589	0	0	23
Romulus	2	2	584	0	0	1
Rusk	1	1	200	0	0	2
Sasakwa	1	1	58	0	0	4
Sec. 34-17-8	1	1	55	0	0	0
Sec. 17-11-9	1	1	33	0	0	0
St. Louis	2	2	489	0	0	5
E. St. Louis	1	1	15	0	0	0
N. St. Louis	2	2	1,044	0	0	1
Sylvian	1	*1	118	0	0	0
Tecumseh Lake	2	1	70	0	1	1
E. Tecumseh	0	0	0	0	0	3
Tussy	1	1	94	0	0	3
Velma (shallow)	6	5	202	1	0	7
Weleetka	2	1	32	0	1	1
S. Wetumka	1	0	0	1	0	1
N. Wewoka	2	1	241	0	1	2
Miscellaneous:						
Creek	6	3	40	2	1	13
Le Flore	2	0	0	1	1	1
Lincoln	2	0	0	*1	1	6
McIntosh	1	0	0	0	1	0
Okmulgee	7	3	15	1	3	20
Osage	5	5	431	0	0	31
Pawnee	4	2	43	0	2	3
Payne	1	0	0	1	0	4
Seminole	2	*2	44	0	0	9
Stephens	1	1	13	0	0	2
Tulsa	2	1	3	1	0	17
Wagoner	2	0	0	0	2	4
Other	0	0	0	0	0	21
Wildcats	13	0	0	0	13	61
Ttl. Nov.	124	80	13,557	12	32	336
Ttl. Oct.	144	81	17,426	12	51	386
Difference	20	1	3,869	0	19	50

*Discovery.

NORTH TEXAS

Antelope	1	1	175	0	0	3
Anzac-Graham	1	1	1,000	0	0	2
Bryson	2	1	450	0	1	2
Coleman	3	3	833	0	0	4

	Comp.	Oil	Prod.	Gas	Dry	Dlg.
Fargo	4	4	526	0	0	4
Griffin	2	2	428	0	0	3
Hull-Silk	8	8	777	0	0	10
K.M.A. and Deep	40	37	13,747	0	3	29
Mathis	2	1	18	0	1	2
Nocona	4	3	28	1	0	4
Throckmorton	4	2	68	1	1	2
T.C.U.	6	5	105	0	1	3
Voth	1	1	17	0	0	1
Walnut Bend	4	3	456	0	1	3
Wildcats*	20	8	1,713	0	12	26
Misc. fields:						
Archer	10	6	214	0	4	9
Baylor	1	1	6	0	0	1
Clay	35	18	861	0	17	14
Cooke	6	5	288	0	1	2
Jack	3	0	0	0	3	6
Montague	4	4	1,335	0	0	8
Throckmorton	2	1	75	0	1	5
Wichita	8	5	120	0	3	13
Wilbarger	4	3	150	0	1	4
Young	17	9	1,283	0	8	25
Subtotal	192	132	24,673	2	58	185

*Burns-Hodge, Clay; Taulbert & McKee-Hoefle, Jack; Gant-Turner, Montague; Chapman-Fowler, Montague; Sisk-Sisk, Wichita; Nash & Windfohr-Parrott, Throckmorton; Richards-Felderhoff, Cooke; Alma-Maxey, Jack.

WEST CENTRAL TEXAS

Akard	1	1	105	0	0	2
Albany	1	0	0	0	1	1
Amity	1	1	50	0	0	1
Cisco	1	0	0	1	0	1
Carlile	1	0	0	0	1	1
Cook	2	2	170	0	0	3
Crosscut	2	1	5	0	1	2
Echo	1	1	49	0	0	1
Lewis	2	2	215	0	0	3
Merkel	3	3	849	0	0	4
McMillan	1	0	0	0	1	1
Novice	3	3	844	0	0	3
Sayles	1	1	117	0	0	1
Sewalt	3	2	10	0	1	3
Strawn	1	0	0	0	1	1
Triplett	1	0	0	0	1	1
Shackelford	2	2	94	0	0	3
Wimberly	3	3	679	0	0	5
Wildcats*	33	2	8	1	30	33
Unlisted fields	0	0	0	0	0	12
Subtotal	63	24	3,195	2	37	82
Ttl. Nov.	255	156	27,868	4	95	267
Ttl. Oct.	297	184	33,088	7	106	285
Difference	42	28	5,220	3	11	18

*F.H.E.-Corbett, Stephens; Hurst-Isenhower, Callahan; Snellers-Smith, Brown (1 M. cu. ft. gas).

NORTHERN WEST TEXAS

Cedar Lake	3	3	2,154	0	0	4
Iatan	2	2	236	0	0	5
Emma	7	6	6,349	0	1	4
Northwest	2	2	370	0	0	3
Ownby	1	1	207	0	0	1
Seminole	10	10	5,556	0	0	8
Shanon Ridge	6	5	546	0	1	6
Slaughter	76	75	92,005	0	1	78
Snyder	1	1	145	0	0	1
Wasson	18	18	8,261	0	0	25
Wildcats*	7	1	160	0	6	16
Misc. fields	0	0	0	0	0	5
Subtotal	133	124	115,989	0	9	156

*Harrison-Nairn, Lubbock.

SOUTHERN WEST TEXAS

Abell	9	9	8,796	0	0	21
Apco	3	1	1,086	0	2	4
Emperor	1	1	370	0	0	2
Dune	1	1	161	0	0	2
Estes	2	2	2,610	0	0	1
Foster	9	9	12,835	0	0	12
Hendrick	4	4	4,361	0	0	2
Goldsmith	3	3	3,178	0	0	3
Halley	2	2	922	0	0	2
Johnson	6	5	1,714	0	1	4
Jordan	2	2	1,508	0	0	2
Keystone	9	9	2,507	0	0	8
Lehn	1	1	84	0	0	2
McCamey	3	3	961	0	0	3
McElroy	6	6	1,784	0	0	5
Magnolia-Sealy	2	2	483	0	0	3
N. Cowden	10	10	4,674	0	0	12
Noelke	2	0	0	1	1	4
N. Ward	1	1	781	0	0	5
Sand Hills*	2	2	2,286	0	0	7
Sand Hills†	2	1	1,143	0	1	5
Toborg	4	3	134	0	1	2
Taylor-Link	4	3	508	0	1	3
Todd Deep	2	1	388	0	1	3
Walker	1	1	363	0	0	4
World	1	1	187	0	0	2
Wildcats‡	6	1	83	0	5	19
Misc. fields	0	0	0	0	0	16
Subtotal	98	84	53,907	1	13	158
Ttl. Nov.	231	208	169,896	1	22	314
Ttl. Oct.	242	230	167,335	0	12	237
Difference	11	22	2,561	1	10	83

*Permian. †Ordovician. ‡Continental-Jones, Crane.

TEXAS PANHANDLE

Carson	6	4	1,042	2	0	6
Gray	30	28	6,517	0	2	23
Hutchinson	36	35	7,090	1	0	31
Moore	9	0	0	9	0	7
Wheeler	7	7	544	0	0	7
Ttl Nov.	88	74	15,193	12	2	74
Ttl. Oct.	79	70	14,487	8	1	72
Difference	9	4	706	4	1	2

EAST TEXAS

E. Texas field:*						
Longview	5	3	126	0	2	9
Kilgore	4	4	162	0	0	8
Joiner	1	1	35	0	0	3
Cayuga	6	3	468	3	0	3
Chapel Hill	4	4	1,026	0	0	3
E. Long Lake	3	3	288	0	0	2
Grapeland	1	0	0	1	0	1
Hawkins	26	26	9,270	0	0	21
Long Lake	4	3	270	0	1	4
Opelika	1	0	0	0	1	1
Pleasant Grove	1	1	300	0	0	1
Powell	1	1	9	0	0	1
Talco	2	1	152	0	1	2
Wildcats†	11	2	357	0	0	17
Misc. fields	0	0	0	0	0	12
Ttl. Nov.	70	52	12,400	4	14	87
Ttl. Oct.	101	88	14,834	5	8	97
Difference	31	36	2,434	1	6	10

*Hourly production. †British American-Young, Henderson Weekly-Barron Limestone.

EAST TEXAS BORDER

Pine Island	3	1	78	0	2	2
Wildcats	1	0	0	0	1	5
Miscellaneous	0	0	0	0	0	3
Ttl. Nov.	4	1	78	0	3	10
Ttl. Oct.	5	1	50	2	2	9
Difference	1	0	28	2	1	1

UPPER GULF COAST

Anahuac	1	1	515	0	0	1
Blessing	1	1	155	0	0	1
Clodine	2	2	334	0	0	2
Danbury	1	1	111	0	0	1
Dyersdale	2	1	745	1	0	2
Esperson	1	1	79	0	0	4
Fannett	2	2	975	0	0	3
Fig Ridge	1	1	810	0	0	3
Ganado	1	1	178	0	0	3
Goodrich	1	1	119	0	0	1
Hull	6	3	780	1	2	4
Lake Creek	1	1	254	0	0	4
Lakeview	1	0	0	0	1	0
Lolita	8	8	1,747	0	0	5
Lovells Lake	2	2	158	0	0	2
Magnet	3	3	278	0	0	1
Markham	1	1	104	0	0	1
Maurbro	4	4	1,001	0	0	2
Navidad	1	0	0	1	0	1
N. LaWard	6	5	998	0	1	6
N. Markham	2	2	248	0	0	2
Orange	1	1	146	0	0	1
Orchard	1	0	0	0	1	0
Oyster Bayou	1	1	692	0	0	1
Pierce Junction	1	1	81	0	0	1
Port Neches	1	1	150	0	0	1
Red Fish Reef	2	2	337	0	0	1
Sour Lake	1	0	0	0	1	0
Texana	1	0	0	0	1	0
W. Beaumont	1	1	80	0	0	1
W. Ganado	7	7	688	0	0	3
W. Columbia	1	1	353	0	0	2
W. Ranch	12	9	1,024	2	1	9
Withers	12	12	1,757	0	0	6
Miscellaneous	7	0	0	0	7	41
Ttl. Nov.	97	77	14,897	5	15	116
Ttl. Oct.	96	69	15,922	1	26	110
Difference	1	8	1,025	4	11	6

LOWER GULF COAST

Agua Dulce	6	6	995	0	0	18
Alice	1	0	0	1	0	1
Ben Bolt	1	1	310	0	0	2
Clara Driscoll	2	1	142	1	0	2
Coleto Creek	1	1	130	0	0	2
Cologne	2	1	77	0	1	1
E. Flour Bluff	1	1	153	0	0	2
Fagan	3	3	228	0	0	3
Hords Creek	1	0	0	0	1	1
LaGloria	1	1	293	0	0	3
Luby	1	1	152	0	0	1
Midway	1	1	108	0	0	3
Minnie Bock	2	2	90	0	0	2
N. McFaddin	2	0	0	2	0	1
Odem	5	2	214	1	2	4
Orange Grove	1	1	87	0	0	2
Premont	1	1	216	0	0	0
Richard King	2	2	107	0	0	2
Refugio	2	2	218	0	0	1
Saxet	1	1	103	0	0	0
Seeligson	3	3	343	0	0	3
Stratton	6	5	824	0	1	8
Tomoconnor	1	1	629	0	0	1
Wade City	1	1	113	0	0	1
Willamar	1	1	157	0	0	1
Woodsboro	1	0	0	0	1	0
Miscellaneous	6	0	0	0	6	32
Ttl. Nov.	56	39	5,689	5	12	97
Ttl. Oct.	87	58	7,078	6	23	87
Difference	31	19	1,389	1	11	10

SOUTH TEXAS

Alta Mesa	2	2	135	0	0	1
Bridwell	1	1	200	0	0	0
Casa Blanca	1	1	56	0	0	1
Colorado	6	5	798	1	0	4
Driscoll	1	1	295	0	0	1
Escobas	1	0	0	0	1	0
Hoffman	1	0	0	0	1	0
Kelsey	2	1	118	0	1	3
Killam	2	2	146	0	0	3
Kreis	2	2	111	0	0	1
Labbe	1	0	0	1	0	0
Lundell	1	1	26	0	0	1
Oakville	1	1	100	0	0	1
Piedre de Lumbre	2	1	75	0	1	2
Palo Blanco	1	0	0	0	1	0
Rincon	11	10	1,371	0	1	5
Sejita	1	0	0	1	0	1
S. White Creek	1	1	200	0	0	3
Sun	2	2	230	0	0	2
S. Campana	1	1	96	0	0	2
Sweden	1	1	128	0	0	0
Yturria	1	1	142	0	0	1
Washburn	1	1	406	0	0	3
Miscellaneous	14	0	0	0	14	43
Ttl. Nov.	58	35	4,633	3	20	78
Ttl. Oct.	92	44	5,639	4	44	51
Difference	34	9	1,006	1	24	27

SOUTH CENTRAL TEXAS

Bee Creek	1	1	45	0	0	1
Darst Creek	1	1	25	0	0	0
Gas Ridge	4	4	10	0	0	2
Tenney Creek	1	1	65	0	0	1
Miscellaneous	3	0	0	0	3	43
Ttl. Nov.	10	7	145	0	3	47
Ttl. Oct.	27	12	352	0	15	38
Difference	17	5	207	0	12	9

SOUTHEAST NEW MEXICO

Eddy County	10	9	706	0	1	37
Lea County	13	9	1,256	0	4	29
Ttl. Nov.	23	18	1,962	0	5	66
Ttl. Oct.	20	18	1,064	0	2	69
Difference	3	0	898	0	3	3

ARKANSAS

Fouke	1	1	340	0	0	1
Macedonia	3	2	688	1	0	3
McKamie	2	0	0	2	0	4
Smackover	2	0	0	0	2	3
Stephens	1	1	210	0	0	1
Urbana	1	0	1	1	0	1
Village	1	1	720	0	0	1
Wildcats	3	1	251	0	2	7
Miscellaneous	0	0	0	0	0	9
Ttl. Nov.	14	6	2,210	4	4	30
Ttl. Oct.	32	17	3,170	2	13	29
Difference	18	11	960	2	9	1

MISSISSIPPI

Tinsley	21	19	11,329	0	2	20
Wildcats	3	0	0	0	3	8
Miscellaneous	0	0	0	0	0	2
Ttl. Nov.	24	19	11,329	0	5	30
Ttl. Oct.	36	29	12,716	0	7	35
Difference	12	10	1,387	0	2	5

NORTH LOUISIANA

Bellevue	2	2	20	0	0	3
Caddo	18	13	719	0	5	12
Converse	1	0	0	0	1	0
Cypress Bayou	1	0	0	0	1	2
De Soto	1	0	0	0	1	1
Larto Lake	1	0	0	0	1	2
Little Creek	5	4	483	1	0	8
Monroe	6	0	0	6	0	5
Nebo	12	10	1,285	0	2	10
Olla	7	4	414	1	2	10
South Olla	1	1	105	0	0	1
Sligo	2	2	133	0	0	1
Sugar Creek	1	0	0	0	1	1
Trout Creek	1	0	0	1	0	1
Urania	1	1	100	0	0	1
Wildcats	9	1	288	0	8	23
Miscellaneous	0	0	0	0	0	8
Ttl. Nov.	69	38	3,647	9	22	89
Ttl. Oct.	107	66	7,937	10	31	98
Difference	38	28	4,290	1	9	9

LOUISIANA GULF COAST

Anse La Butte	2	1	242	0	1	9
Bateman Lake	1	0	0	1	0	1
Bayou Blue	2	1	120	0	1	1
Bayou Sale	2	2	746	0	0	5
Belle Isle	2	0	0	0	2	1
Chacahoula	2	1	221	0	1	2
Black Bayou	1	0	0	0	1	1
Bosco	1	0	0	0	1	0
Caillou Island	1	0	0	0	1	1
Cameron Meadows	2	1	58	0	1	2
Chalkley	2	2	631	0	0	1
Charenton	2	1	105	0	1	4
Delacrois Island	1	1	451	0	0	1
E. Hackberry	2	2	1,129	0	0	2
Erath	2	2	340	0	0	2
Gibson	1	1	260	0	0	1
Golden Meadows	1	1	88	0	0	5
Gueydan	2	1	217	0	1	4
Grandison	1	0	0	1	0	1
Jefferson Island	1	1	280	0	0	1
Jennings	1	1	146	0	0	3
Lake Salvador	1	1	423	0	0	1
Neale	1	1	357	0	0	4
New Iberia	2	2	574	0	0	4
Paradis	2	2	843	0	0	4
Pine Prairie	3	2	981	0	1	2
Port Allen	1	1	65	0	0	1
Quarantine Bay	1	1	564	0	0	0
Richie	1	1	145	0	0	1
St. Gabriel	4	4	954	0	0	3
Starks	1	0	0	0	1	1
Stella	1	0	0	0	1	1
Sweet Lake	1	1	175	0	0	1
Ville Platte	8	6	1,304	0	2	10
West Bay	2	2	463	0	0	2
W. Hackberry	1	0	0	0	1	2
W. Lake Verret	3	3	463	0	0	2
White Castle	1	1	327	0	0	1
Woodlawn	1	0	0	0	1	1
Miscellaneous	2	0	0	0	2	62
Ttl. Nov.	69	47	12,430	2	20	151
Ttl. Oct.	66	45	11,333	3	18	140
Difference	3	2	1,097	1	2	11

MONTANA

Bowdoin	2	0	0	1	1	22
Box Elder	1	0	0	1	0	1
Cedar Cr.	1	0	0	1	0	1
Cut Bank	10	9	1,117	1	0	23
Devon	1	0	0	1	0	1
Kev.-Sunburst	2	1	48	0	1	26
Vaughn	1	0	0	0	1	0
Miscellaneous	0	0	0	0	0	24
Ttl. Nov.	18	10	1,165	5	3	98
Ttl. Oct.	34	20	2,962	6	8	95
Difference	16	10	1,797	1	5	3

WYOMING

Big Pole Cat	1	0	0	0	1	0
Bunker Hill	1	0	0	1	0	1
Circle Ridge	1	0	0	0	1	1
Cole Creek	1	1	70	0	0	1
Elk Mountain	1	0	0	0	1	0
Frannie	1	1	170	0	0	2
La Barge	3	3	99	0	0	3
Lost Soldier	1	1	210	0	0	2
Mahoney	1	1	25	0	0	1
Maverick Spgs.	1	1	60	0	0	1
Oregon Basin	4	4	1,255	0	0	1
Osage	1	1	50	0	0	4
Miscellaneous	0	0	0	0	0	46
Ttl. Nov.	17	13	1,939	1	3	63
Ttl. Oct.	10	9	1,856	0	1	65
Difference	7	4	83	1	2	2

COLORADO

Alamo	1	1	0	0	1	4
E. Hiawatha	1	0	0	1	0	0
Iles	1	0	0	0	1	1
Miscellaneous	0	0	0	0	0	36
Ttl. Nov.	3	0	0	1	2	41
Ttl. Oct.	2	1	716	1	0	44
Difference	1	1	716	0	2	3

CALIFORNIA

Belridge, North	0	0	0	0	0	2
Canal	0	0	0	0	0	1
Coalinga	3	3	5,015	0	0	7
Coles Levee	0	0	0	0	0	5
Coyote, East	0	0	0	0	0	2
Coyote, West	1	1	70	0	0	2
Delano gas field	0	0	0	0	0	1
Dominguez	3	2	1,056	0	1	3
Dver Creek	1	0	0	0	1	0
Edison	3	3	380	0	0	3
Elk Hills	1	1	60	0	0	4
Greeley	2	2	4,589	0	0	6
Huntington Beach	7	7	3,062	0	0	4
Inglewood	3	3	3,473	0	0	3
Jacalitos	0	0	0	0	0	1
Kern River	3	3	263	0	0	7
Kettleman North Dome	6	5	4,236	0	1	7
Long Beach	2	2	131	0	0	2
Marysville Buttes	0	0	0	0	0	1
Midway-Sunset	4	3	75	0	1	4
Montebello	1	0	0	0	1	0
Mountain View	0	0	0	0	0	1
Mount Poso	7	7	1,466	0	0	6
Paloma	0	0	0	0	0	1
Potrero	1	1	98	0	0	0
Raisin City	3	2	449	0	1	2
Rincon	1	1	122	0	0	3
Rio Bravo	3	3	3,581	0	0	4
Rio Vista	3	0	0	2	1	1
Rosecrans	0	0	0	0	0	3
Round Mountain	1	1	102	0	0	0
San Miguelito	0	0	0	0	0	1
Santa Maria	2	1	1,009	0	1	4
Santa Maria Valley	14	14	10.327	0	0	8
Seal Beach	1	1	1 042	0	0	0
Ten Section	3	3	2,041	0	0	2
Torrance	1	1	65	0	0	5
Tupman	2	1	1,995	1	0	4
Turnbull Canyon	0	0	0	0	0	1
Union Avenue	1	0	0	1	0	1
Ventura Avenue	2	2	6,255	0	0	8
Ventura-Newhall	6	5	2,940	0	1	14
Whittier	0	0	0	0	0	1
Wilmington	18	18	6,592	0	0	10
Wildcats	7	0	0	0	7	29
Ttl. Nov.	116	96	60.492	4	16	174
Ttl. Oct.	91	79	45,182	2	10	177
Difference	25	17	15,310	2	6	3

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1941 High	1941 Low	Week ended Dec. 13 High	Week ended Dec. 13 Low	Week ended Dec. 13 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1940	Com. sh. earn. 1939	1940 High	1940 Low	1939 High	1939 Low
63½	44	57	53	54	Amerada Corp.	788,675	N.P.	50cQ	10-31-41	$2.00	$2.25	$1.56	58½	38½	74½	50
28⅛	19½	27⅜	23½	26⅝	Atlantic Refining	2,663,999	$25	$1.25†	12-15-41	1.00	2.11	1.66	27⅛	18¼	24¾	18⅛
13⅛	7	10⅞	7	9	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.50	—.48	1.39	16⅝	8½	21	10¼
10½	7⅝	9	8	8⅞	Barnsdall Oil Co.	2,558,779	$5	15c	12-8-41	.60	.97	.76	13⅜	7⅛	19½	11⅛
6½	5¼	6	5¼	5¼	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	11-15-41	.72½	.28	.55	8⅛	5½	9⅞	6½
27½	17⅝	26½	23½	26⅜	Continental Oil of Delaware	4,682,572	$5	25cQ	9-29-41	1.00	.92	1.35	25	16⅛	31½	19⅞
5	3	3¾	3	3¼	Houston Oil	1,098,618	$25	....	10-17-30	....	.30	.43	6⅞	3⅜	9⅜	4½
13⅜	9½	11¼	9½	10	Lion Oil Refining	435,815	N.P.	25cQ	10-15-41	1.00	1.05	1.50	14⅜	9	18⅛	10
17⅞	13	16⅞	15⅛	16¼	Mid-Continent Petroleum	1,857,912	$10	75c	12-1-41	.80	1.60	1.42	17⅜	11½	18	11⅛
15½	9⅜	13⅞	12¼	12½	Mission Corporation	1,378,645	$10	60c	10-16-41	.25	1.01	.87	11⅜	7⅛	14⅞	8¾
7⅞	4	6⅛	4	5⅜	National Supply	1,155,517	$10	....	12-22-37	....	—.49	—.87	9¾	4⅝	15½	5⅝
10	6¾	8½	7¼	7⅞	Ohio Oil Co.	6,563,377	N.P.	25c	12-15-41	.45	1.02	—.10	8¾	5⅜	10½	6
9¾	5½	7	5⅜	6	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	....	—.21	.81	8⅞	5½	11⅞	7
10½	7¼	8⅛	7⅞	7⅞	Pan American Pet. Trans.	4,702,945	$5	25c	12-21-40	.25	1.20	1.10	10½	6¾	8¾	5
46	35¾	45⅝	42⅛	45¼	Phillips Petroleum	4,449,052	N.P.	†75c	11-29-41	2.00	2.60	2.21	41¾	27⅛	46½	31¼
17	13⅞	16	13⅞	15½	Plymouth Oil Co.	1,038,633	$5	30c	9-30-41	‡1.30	1.38	2.38	22¾	15	24	17⅛
11¾	7	11¼	9¾	11⅛	Pure Oil Co.	3,982,031	N.P.	50c	12-1-41	.25	1.21	1.11	11½	6¾	11¾	6⅛
12⅛	7¼	9¾	8½	9⅛	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-40	.50	.95	.65	9¼	5⅞	10¼	6⅝
17	12½	14⅛	12½	12¾	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	9-15-41	1.00	1.05	1.40	20	11	24⅜	15⅛
16¼	10⅛	15¾	13¾	15¼	Shell Union Oil	13,070,625	N.P.	40c	7-21-41	.75	1.05	.77	13⅛	7⅝	17¼	9⅞
35¼	18⅞	32¼	28	30⅜	Skelly Oil	995,349	$15	$1.00	12-18-41	1.25	3.28	1.99	23¼	12¼	29½	15½
10¾	7⅞	9¾	7⅞	8⅛	Socony-Vacuum	31,206,071	$15	25cSA	9-15-41	.50	1.17	1.10	12½	7⅛	15⅛	10¼
25⅛	17⅞	24	20	21⅝	Standard Oil of California	13,003,953	N.P.	†65c	12-15-41	1.00	1.73	1.38	26⅛	16¼	33⅝	24¼
34⅛	25½	32	28¾	30½	Standard Oil (Indiana)	15,272,020	$25	50c†	12-15-41	1.50	2.20	2.23	29	20¾	30	33¾
46⅞	33	46⅜	42⅛	44	Standard Oil of New Jersey	27,280,998	$25	1.50†	12-15-41	1.75	4.54	3.26	46½	29⅞	53½	38
48⅛	34¼	40¾	36⅝	39¼	Standard Oil of Ohio	753,740	$25	$1.00†	12-15-41	2.00	7.44	6.64	41¾	26¼	32¾	17
66½	50	62	57⅝	59¾	Sun Oil	2,434,863	N.P.	25cQ	12-15-41	*1.00	3.03	2.74	65⅞	46¾	66	45¾
2⅜	1¼	1⅝	1¼	1¼	Superior Oil Corp.	1,388,979	$1	10c	12-28-40	.10	.11	.04	2½	1⅛	3⅝	1⅜
46⅜	34½	45⅞	40¾	43¾	Texas Corp.	10,876,139	$25	50cQ	10-1-41	2.00	2.90	3.02	47⅝	33	50¾	32½
4⅛	2	2½	2	2⅛	Texas Gulf Producing Co.	888,147	N.P.	10c	6-14-41	.20	.63	.69	4¼	2½	5¾	3¼
7⅜	5¼	6½	6⅛	6⅛	Texas Pacific Coal & Oil	888,236	$10	10c	12-1-41	.40	.54	1.00	8⅝	5⅜	11⅜	7
11½	9⅜	11¼	10⅜	11	Tide Water Associated	6,371,827	$10	25c†	12-1-41	.70	1.14	1.05	12	8¾	14¼	9½
16	12½	14½	12½	13¾	Union Oil Co. of California	4,666,270	$25	25c	11-10-41	1.00	.99	1.25	17½	17	19¾	15⅛
31	24¾	25¼	24¾	24⅞	Union Tank Car Co.	1,177,381	N.P.	50c	12-1-41	1.75	2.22	2.07	29⅞	22¾	24¼	20⅛
2⅜	1⅝	2	1⅝	1¾	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.35	.77	3⅝	1¾	4¼	2⅜

*Also 5 per cent in stock. †Includes extras. Also 2 per cent in stock. —Deficit.

New York Curb Exchange

1941 High	1941 Low	Week ended Dec. 13 High	Week ended Dec. 13 Low	Week ended Dec. 13 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1940	Com. sh. earn. 1940	Com. sh. earn. 1939	1940 High	1940 Low	1939 High	1939 Low
¾	⅛	1/16	⅛	1/16	American Maracaibo Co.	1,778,415	$1	....	.....	....	—$0.04—	$0.05	##	¼	1¼	⅛
8¼	5⅛	6¾	5⅝	6¾	American Republics Corp.	1,308,049	$10	10c	7-10-41	....	.78	.14	10¾	4½	11¾	5½
2½	1	2	1¾	1⅞	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.88	—.95	3¼	1⅝	7¼	2½
46	36½	39	38	39	Buckeye Pipe Line Co.	200,000	$50	$1	12-15-41	$4.00	5.09	3.13	43	28	34¾	26½
110¼	87	90	87	87¼	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	9-29-41	6.00	6.33	7.87	117	95	130	108⅝
6⅝	2½	3⅜	2½	2⅝	Cities Service (new)	3,703,978	$10	....	6-1-32	....	1.72	.68	6¾	4	9¼	4¼
2	⅝	1¼	1⅛	1⅛	Cosden Petroleum	465,804	$1	....	.....	....	—.34	.15	2⅛	⅝	2¼	½
19¾	12½	16⅝	13½	16⅝	Creole Petroleum	6,974,356	$5	50cSA†	12-15-41	1.00	.98	1.38	24¼	11⅝	28	16⅝
9	3¾	7½	6	7	Darby Petroleum	351,390	$5	25c	7-15-41	....	1.12	.03	4⅜	2⅞	7⅛	3⅝
2¼	1	1½	1	1½	Derby Oil & Refining	263,162	N.P.	....	.....	....	.12	—.37	2	¾	2⅝	1½
28¾	19	19	19	19	Eureka Pipe Line	50,000	$50	50c	11-1-41	2.25	—.49	.63	31	20¼	23	15⅛
39	29	37½	32¼	36½	Gulf Oil Corp.	9,076,202	$25	75c†	12-15-41	1.25	2.44	1.69	39⅞	25⅛	45⅛	29¼
65	52¾	62½	55¾	60	Humble Oil & Refining	8,987,840	N.P.	62½c	12-26-41	2.00	3.13	3.33	68	47½	71	42½
7⅜	5½	6½	5½	6	Imperial Oil of Canada	26,965,078	N.P.	25c	12-1-41	.62½	.65	.71	12⅜	5⅜	17	11⅜
5	2¾	3½	3	3	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	*2.80	.09	.33	7¾	3	7¼	5½
11⅞	8⅞	10½	9	9⅞	International Petroleum	14,324,088	N.P.	50c	12-1-41	1.25	.94	1.19	10¾	8¼	27½	17
2⅝	1½	1⅝	1½	1⅝	Kirby Petroleum Co.	500,000	$1	10c	3-15-41	....	.16	.06	2¾	1⅝	3⅜	2⅛
10⅛	7	7⅝	7	7	Lone Star Gas	5,518,347	N.P.	20c	8-22-41	.70	1.17	.98	10¾	7⅝	10½	7⅛
5⅝	3⅝	4	3⅝	3¾	Louisiana Land & Exp.	2,966,762	$1	10c	9-15-41	.35	.29	.22	6¼	3¾	7¾	4
10½	9½	10¼	10¼	10¼	Margay Oil Corp.	149,943	N.P.	25cQ	10-10-41	1.00	1.02	1.52	17	9¼	17	14½
4⅛	2½	2⅞	2⅝	2⅝	Middle States Petroleum "A"	291,970	$1	37c	1-31-41	.63	.31	.37	4⅛	2¾	5⅜	2¾
8	6½	6⅞	6½	6½	Midwest Oil Co.	998,474	$10	45c	12-15-41	.90	.88	.99	8½	5½	8¾	6⅝
6⅛	4½	4¾	4½	4½	Mountain Producers	1,593,584	$10	30cSA	6-16-41	.60	.58	.70	6¼	4⅞	6	4⅞
12⅜	9¾	10⅛	9¾	10	National Fuel Gas	3,810,183	N.P.	25cQ	10-15-41	1.00	1.12	.95	13⅛	10	14	11¼
12⅞	8⅞	10½	8⅞	9½	National Transit	509,000	$12.50	50c	6-16-41	1.00	1.08	.91	12½	8¾	9½	7¼
2¼	1	1½	1¼	1⅜	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.03	.02	1¼	¾	1⅜	1
8¼	6⅝	..	..	..	New York Transit	100,000	$5	30c	10-15-41	.60	.91	.88	7¾	5¼	6	4
10½	7¼	8	7¼	8	Northern Pipe Line	120,000	$10	90c	12-1-41	.80	.70	.31	9⅞	6	7	4½
5½	2⅝	5	4	4½	Pantepec Oil	2,856,872	$1	....	.....	....	.02	....	5½	2½	7⅝	4
3¾	1	2⅝	2	2⅛	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.04	.70	3¼	1	5	1¾
2⅝	2⅛	2⅝	2⅛	2¼	Ryan Consolidated	298,931	N.P.	10c	12-28-40	....	.43	.16	3	1¼	3	1⅞
8	6½	..	..	..	Southern Pipe Line	100,000	$10	50c	12-11-41	.50	.81	.25	11¾	4¾	4⅞	3½
43½	29	36½	29	33¼	South Penn Oil	1,000,000	$25	37½c	9-26-41	2.50	2.10	2.84	44	28	40½	26¾
30½	23	24½	24½	24½	Southwest Penna. Pipe Lines	35,000	$50	50c	10-1-41	6.50	3.22	2.06	35	21	23	18
20⅜	17⅛	18⅛	17⅛	17½	Standard Oil of Kentucky	2,604,790	$10	25c	9-15-41	1.30	1.47	1.53	20⅞	16½	20⅛	17¼
2⅜	1⅜	2⅛	1⅝	1⅞	Sunray Oil	1,975,876	$1	5c‡	12-19-41	.10	.23	.25	2	1⅝	2¾	1⅝
3¼	2⅝	3	2⅝	2⅝	Texon Oil & Land	936,024	$2	15c	12-27-41	.40	.45	.49	3⅛	2	4	2⅝
5	2¼	4¼	3⅞	4	Transwestern Oil Co.	750,000	$10	....	.....	....	—.59	—1.42	3⅜	2	6	2⅛
1/16	⅛	1/16	⅛	⅛	United Gas Corp.	7,818,959	$1	....	.....	....	—.49	—.55	2⅛	¾	3⅜	1½

*Includes $2.50 capital distribution. †Includes extras. —Deficit. ‡Also 5 per cent in stock.

Personal Paragraphs

KEITH CLEVENGER, of Wilcox Oil & Gas Co., Tulsa, is the author of a monograph of the petroleum industry for use by vocational and professional schools. Mr. Clevenger formerly was director of publicity and advertising for the American Gas Association.

JAMES A. LEWIS, Core Laboratories, Inc., Dallas, Tex., was elected president of the Dallas Petroleum Geologists. Other officers are DR. C. C. ALBRITTON, professor of geology, Southern Methodist University, vice president; BARNEY E. FISHER, Coronado Corp., secretary. FRED E. JOEKEL, Magnolia Petroleum Co., was named to the executive committee.

SAM W. HOGAN, production superintendent of Transwestern Oil Co. at Hutchinson, Kans., has been transferred to company headquarters at San Antonio, Tex.

H. D. NELSON, geologist of the Cal-Tex Co. in Arabia, is now associated with the Texas Co.,, with headquarters at New Orleans, La., as geologist and paleontologist.

DR. G. S. HUME, of the Geological Survey of Canada, who has been located in Alberta with headquarters at Calgary, left recently for Toronto and Ottawa, where he will spend a couple of months.

LOUIS MARTIN TIETZ, pumper for Carter Oil Co., at Trees, La., has been awarded a 30-year service award. He has been in the Louisiana area all the time.

EMIL HUGUENIN, chief deputy oil and gas supervisor of the California Division of Oil and Gas, with offices in San Francisco, was in southern California on business during the past week.

CALVIN C. B. WHEELER, geologist for the Standard Oil Co. of Venezuela at Maracaibo, is now associated with the geological department of the Texas Co. at New Orleans, La.

JOE W. LANG, of Pecos, Tex., field man for the U.S.G.S., addressed members of the West Texas Geological Society at a meeting in Midland, Tex., last week. Mr. Lang spoke on "Geology and Ground-Water Resources of a Part of the Pecos River Basin in Texas."

C. V. MILLIKAN, chief engineer, Amerada Petroleum Corp., Tulsa, addressed the student section of the A.I.M.E. at the University of Texas recently. His subject was "Practical Aspects of Bottom-Hole-Pressure Measurments."

JOSEPH B. SPANGLER, engineering department of United Gas Pipe Line Co.'s Shreveport, La., office, has donned the uniform of a lieutenant commander in the U. S. Naval Reserve and has changed his address from Shreveport, La., to Commandant, Tenth Naval District, San Juan, Puerto Rico. He is a graduate of Annapolis.

EARL L. HOSLER, district gager for Oklahoma Pipe Line Co., at Marlow, Okla., has been awarded a 30-year button.

H. B. KELLOGG

H. B. KELLOGG has been elected president and general manager of Seaside Oil Co., Santa Barbara, Calif. F. E. McCLAREN was named vice president and sales manager. Mr. Kellogg succeeds to the office vacated by the recent death of M. W. O'Brien. He has been vice president since September 1936 and a director since February 1937. He has been associated with the petroleum industry for more than 25 years.

P. D. ELKINS, SR., formerly section foreman for United Gas Pipe Line Co., Shreveport, La., stationed at Clinton, Tex., has been promoted to section foreman of the Dallas, Tex., area. Replacing Mr. Elkins is JOSEPH GOWAN, who for the past few months has been an inspector on the company's 216-mile Lirette-Mobile gas line nearing completion on the Gulf Coast.

ROBERT H. ROBIE, petroleum geologist with Shell Oil Co., Inc., has been transferred from San Antonio to Ballinger, Tex., for field work.

GEORGE H. CLARK, geologist for Texas Co. in the South Texas division at Houston, Tex., has been transferred to the company's division offices at New Orleans, La.

R. S. MIESSE, independent operator of Los Angeles, Calif., is in Bakersfield, Calif., for an indefinite period where he is preparing to drill eight test wells in the Devil's Den field.

J. H. MOORE, scout for the Humble Oil & Refining Co. at Midland, Tex., has been transferred to New Orleans, La., and will have charge of the Louisiana and Mississippi district.

JESS RECTOR, drilling and production superintendent of the Southern Alberta division of Western Drilling Co., has arrived in Los Angeles, Calif., following the forced winter shutdown of his company's development operations in Canada.

W. E. (STEVE) DUNLAP, consulting engineer of Los Angeles, Calif., has returned to his office after an extended northern trip. While he was away he saw the Oregon-Oregon State football game in which his son, Bill, played as regular halfback for the University of Oregon.

RALPH POWELL and J. H. MARKLEY, both geologists with the Texas Co., showed colored slides, which were made in Cuba and national parks of the Southwest, before the Fort Worth Geological Society at its weekly luncheon held December 15 in Fort Worth, Tex.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Dr. S. G. Kennedy and James P. Gilmore, his attorney, both of Tulsa, have been in New York reportedly for the purpose of closing up the sale of the half interest in the Osage lease owned by Kennedy & Springer.

Sizing up the oil situation in California, it is safe to say that not a single acre of virgin territory has been opened and every barrel of oil produced has been taken from the duly recognized fields. The securing of new territory to take the place of that already developed is a matter of most serious consideration.

20 YEARS AGO

In an address before the engineering students of the Texas A. and M. College, W. S. Farish, vice president and general manager of the Humble Oil & Refining Co., told the students that the oil business was in its infancy.

An effort to standardize the specifications of rig irons and parts manufactured by the big oil-field supply companies was inaugurated by the Purchasing Agents' Association of Oklahoma recently. Necessity for such steps was stressed in numerous speeches before the American Petroleum Institute at Chicago last week.

Ninety-seven oil wells were completed in the Burbank field in Osage County, Oklahoma, before a failure was recorded.

10 YEARS AGO

The oil industry was warned in a forceful statement addressed directly to it by Amos L. Beaty, president of the American Petroleum Institute, that it faces the choice between sanity of operations and utter collapse.

Recommendations for six proposed rules seeking to conserve oil and gas in the Oklahoma City field have been made to the Corporation Commission by a committee of eight engineers and geologists of which M. J. Kirwan, of Indian Territory Illuminating Oil Co., is chairman.

EARL CALLOWAY, independent operator of Corpus Christi, Tex., has been chairman of the war-relief drive of the Nueces County chapter of the American Red Cross.

LINDSEY G. MORGAN, geologist with Cities Service Oil Co., formerly stationed at Wichita, Kans., has been transferred to the company's office at Mattoon, Ill.

R. L. KEYES, formerly assistant division manager of the Texas Co. of California at Los Angeles, Calif., is now located at New Orleans, La., as assistant division manager of the Louisiana, Arkansas and East Texas division.

MAX DAVID, formerly in charge of Landreth Production Co.'s offices at Lafayette, La., has moved to Midland, Tex., where he was formerly stationed prior to moving to Louisiana, and will open offices as a consulting geologist.

MASTIN NIXON, vice president and general manager, and I. C. HATRIDGE, assistant vice president and general manager of Southern Minerals Corp., were honored with a dinner given by employes of the Southern Minerals Corp. and Southern Minerals Pipe Line Corp. the past week.

D. R. LOUCK, Wichita, Kans., has been reelected president of the Kansas Independent Oil and Gas Association. JAMES DAVIS, JR., Wichita, was elected secretary; JOHN HARWOOD, Wichita, was named treasurer. Vice presidents are JOHN DENMAN, JR., Independence; RALPH NICHOLSON, Ellis, and F. G. STODDER, Wichita.

B. B. ELLIS, vice president, Pacific Oil & Gas Development Corp., is in Bakersfield, Calif., to take personal charge of renovation work on a lease recently assigned to the company by Tide Water Associated Oil Co., in southeastern Kings County, California. The preliminary work is expected to lead to the drilling of 20 new wells on the property.

Cosmopolitan Oil Man

Harold F. Moses, chief geologist and manager of the exploration department of Carter Oil Co., Tulsa, has been "at home" on four continents. The oil business took him to three of them, while his sojourn on the fourth was a part of his service with the Army during the 1917-18 unpleasantness.

HAROLD F. MOSES

A Hoosier by birth, Mr. Moses attended school in Indiana, and immediately upon graduation from high school, joined the Army, in which he served for more than 2½ years. It was during the latter part of this service that he was in Russia, helping to guard the Trans-Siberian Railroad.

Upon his return to the United States, he entered University of Chicago, from which he graduated in 1923, with a degree of bachelor of science. Between college years and after, during the summers, he worked for the Illinois Survey, and for the U. S. Geological Survey. He also taught geology at University of Oklahoma.

In 1926 he joined Cities Service Oil Co. as geologist, his duties taking him to Mexico, Panama, Colombia, Trinidad, Peru, Venezuela, and Canada. He was with this company for several years, and in 1935 he went to Turkey as petroleum adviser to the Turkish Government, and was there for a year. Upon his return in 1936, he joined Carter Oil Co., and was first division geologist of the Rocky Mountain division. Later he was transferred to the Michigan division, and still later was made superintendent of the eastern division, comprising the states of Illinois, Indiana, and Michigan.

In 1937 he came to Tulsa for Carter, with the title of coordinator of exploratory work. Two years later he was appointed chief geologist, and in April of 1941 was made head of the exploration department, retaining his post as chief geologist.

GEORGE A. HILL, JR., president of the Houston Oil Co. of Texas, has been named a director of the Federal Reserve Bank of Dallas, Tex.

LEE C. LOMAS, manager of the Michigan region of Carter Oil Co., has moved his office from Saginaw to Mount Pleasant, Mich.

GLENN BISH has been transferred by Ohio Oil Co. from the Houston, Tex., division to Mount Pleasant, Mich., in charge of drilling and production.

J. RUDY WRIGHT, former chief gager of the pipe-line division, Magnolia Petroleum Co., at Salem, Ill., has been sent to Midland, Tex., as scout for the West Texas-New Mexico area.

J. P. SCHALLER, engineer of the Moberg Laboratories, Los Angeles, Calif., delivered a paper of interpretation of water-conditioning test before the Taft chapter of the California Natural Gasoline Association recently.

B. P. SIBOLE, vice president, Stanolind Pipe Line Co., Tulsa, last week was elected a director of the Tulsa Chamber of Commerce. Another oil man who was elected at the same time was PHIL A. BOHART, Gulf Refining Co.

HOLGER JENSEN, Jensen Petroleum Co., is the new president of the Chicago Oil Men's Club. Other officers are J. GLEN PHINNEY, Cities Service Oil Co., vice president; G. N. OLSON, George N. Olson Co., treasurer, and LON C. DENNING, Johnson Oil Refining Co., secretary.

J. H. McCASKELL and R. F. GIBSON, production department of the Texas Co., were awarded the president's medal of the National Safety Council at a company-sponsored banquet in Salem, Ill., last week. The awards were in recognition of their work in saving the lives of two 12-year-old boys a few months ago. The medals were presented by H. N. PARDEE, Tulsa, Texas Co. division manager.

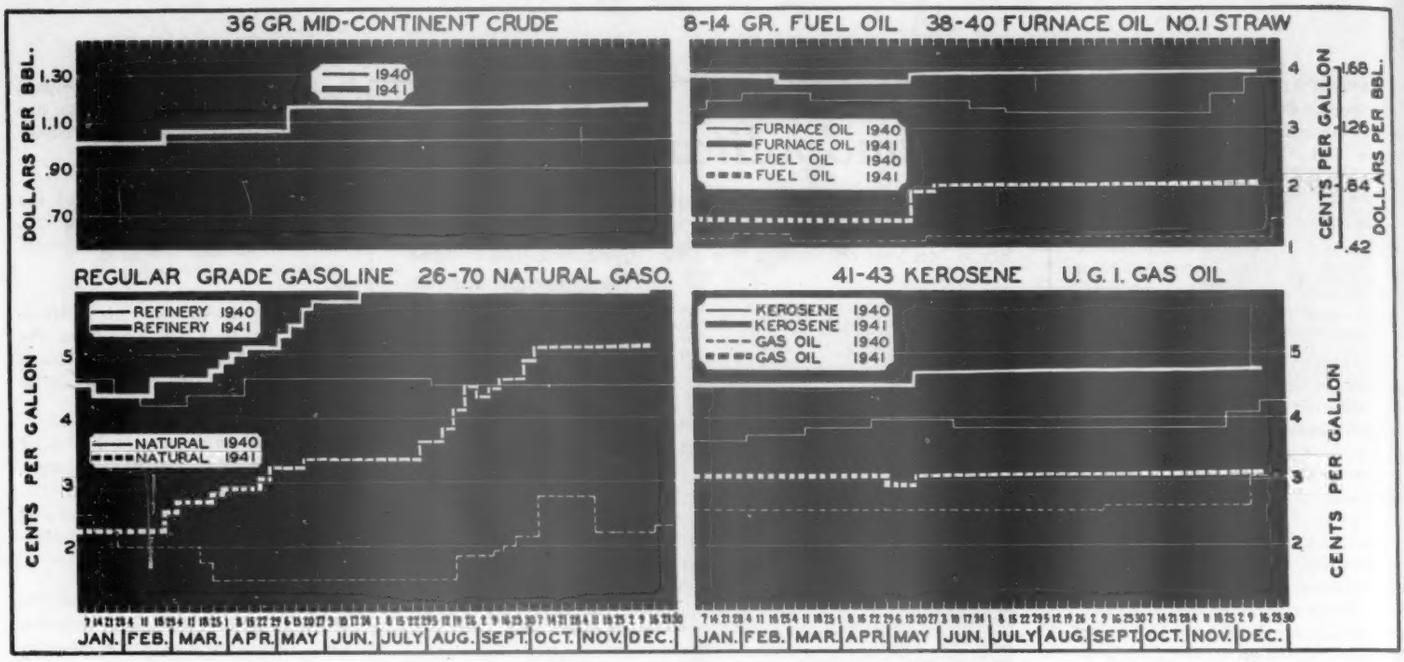
Shifts: MARK L. TERRY, engineer, Texas Co., from Tulsa to Mattoon, Ill.; CRAIG TERRIS, geologist, Mott-Smith Corp., from Rugby to bottineau, N. D.; J. A. TRAUGHBER, superintendent, Transwestern Oil Co., from Oklahoma City, Okla., to Hutchinson, Kans.; J. RAY STEBBINS, Stebbins Oil & Gas Co., from Tulsa to Mount Vernon, Ill.; WARREN H. WYNN, geologist, Sinclair-Prairie Oil Co., from Bismarck, N. D., to East Lansing, Mich.; R. V. GERNER, engineer, Phillips Petroleum Co., from Fort Bliss, Tex., to Phillips, Tex.; J. W. SMITH, superintendent, Shell Oil Co., Inc., from Big Spring to Denver City, Tex.; C. J. BONNER, president, C. J. Bonner Oil Corp., from Burkburnett to Wichita Falls, Tex.; ROBERT ARMITAGE, superintendent, Mid-Union Drilling Co., from Pampa, Tex., to Oklahoma City, Okla.; OLEN W. ABBOT, engineer, Magnolia Petroleum Co., from Smackover, Ark., to Alice, Tex.; W. H. LAW, superintendent, Jones & Brooks, from Bellville, Ill., to Oklahoma City, Okla.; C. R. McKENNEY, engineer, Magnolia Pipe Line Co., from Salem, Ill., to Gaston, Ind.; N. E. FAWLEY, engineer, Standard Oil Co. of New Jersey, from Elizabeth to Linden, N. J.; J. H. SALMON, engineer, Shell Oil Co., Inc., from New York City to Washington, D. C.; L. E. MORGAN, geologist, I.T.I.O. Co., from Wichita, Kans., to Mattoon, Ill.; JOE BRENDLER, engineer, Cities Service Oil Co., from Bartlesville, Okla., to Chicago; LT. GEORGE O. YOUNG, engineer, Ford, Bacon & Davis, Inc., from Norman, Okla., to Camp Wallace, Tex.

G. O. MYERS, former construction foreman for United Gas Pipe Line Co., Shreveport, La., and stationed at Bogalusa, La., has been promoted to section foreman. He replaces L. P. MULLIN, transferred to Petal, Miss., as section foreman of the newly created Hattiesburg section of the company's operations.

H. N. K. BROOKINGS, geologist, Phillips Petroleum Co., Bartlesville, Okla., who spent the summer and fall in the Dakota basin, has been transferred to the Oklahoma City, Okla., office.

JACK I. LAUDERMILK has resigned his position as instructor of petroleum engineering at University of Texas to accept a commission as captain in the Air Corps of the U. S. Army. He is now stationed at the Base Signal office, Paine Field, Everett, Mass.

B. M. NOWERY, JR., formerly petroleum engineer in the Rodessa field for Union Producing Co., Shreveport, La., has been promoted to district petroleum engineer in the Houston, Tex., offices. Mr. Nowery replaced W. D. MORRIS, who has resigned to enter business independently in Houston, Tex. A graduate of Oklahoma University, Mr. Nowery joined the Union Producing Co. in 1937.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Mid-Continent Refiners Waiting on Specific Octane-Reduction Program

By H. STANLEY NORMAN

THE reduction of octane ratings of automotive gasoline available to motorists of the nation and the various contingent problems radiating from the apparent necessity this week displaced prices, volume and other routine factors in the discussions of Mid-Continent refiners. Awaited is some specific program from the Office of Petroleum Coordinator for coping with the shortage of tetraethyl lead, although certain factions in the industry, notably the refining and marketing committees of District 1, have made proposals that would eliminate the deficiency of the antiknock compound.

The joint resolution of the two District 1 committees pointed out that a reduction in the quality of gasoline available to the motoring public would increase the motor-fuel bill of the United States by $125,000,000 a year. The protest against deterioration of gasoline quality was framed previous to outbreak of the war in the Pacific.

Lead Receipts Curtailed

Refiners in the Mid-Continent and elsewhere are receiving tetraethyl lead at a curtailed rate in keeping with the formula previously announced by the Ethyl Gasoline Corp. Several refiners anticipate that the average quality of motor fuel eventually will be scaled down about three octane numbers for duration of the shortage which may be terminated by the middle of next year. Strong consideration is being given to elimination of antiknock fluid in the competitive grade of gasoline and a reduction of regular motor fuel to around 72 octane, A.S.T.M. testing method.

Control of aviation gasoline and the components that go to make up the finished fuel instituted this week by the Office of Petroleum Coordinator also may adversely affect the quality of motor fuel available to the motoring public.

Refined Oil Market Barometer

Refiners throughout the country this week turned their main interest to the sweeping order issued by the Office of Petroleum Coordinator covering aviation gasoline. Strict federal control of the base stocks from which aviation gasoline components may be derived could conceivably affect the operations of practically every refiner in the country whether he had an aviation-gasoline plant or not.

MID-CONTINENT: All products are firm at prices prevailing for several weeks and movement is high.

GULF COAST: Spot-market trading is limited because refiners are sold up on most products through January 15.

CALIFORNIA: Fuel oils continue strong. Gasoline is soft. War scare curtails driving.

PENNSYLVANIA: All products are firm. Neutral oils in strong demand.

CHICAGO: Fuel-oil sales touch new high for the current season.

The OPC program includes diversion of stocks most suitable to manufacture of aviation gasoline into channels that would use it exclusively for that purpose. This development may tend to diminish certain components of aviation gasoline that have been previously available for production of automotive-engine fuels. Consequently, the manufacturers of gasoline for the motoring public have two potential deficiencies to consider. It is considered unlikely that the Government will make any material change in its policy with respect to manufacture of tetraethyl lead in view of the emergency resulting from outbreak of the shooting war. It is also evident that the Government will frown upon the use of any raw materials in automotive-engine fuel that have any possible qualifications for aviation gasoline.

Meanwhile, the demand for all grades of motor fuel from Mid-Continent refineries continues at levels considerably in excess of expectations. Prices are firm at the levels prevailing for several weeks and there is little gasoline available for spot-market trading. The motor-fuel movement from Group 3 into the northern consuming cities is not equal to midsummer rates, but is ahead of expectations from most sources of supply.

Fuel Demand Increasing

Advent of colder weather in the Great Lakes region stimulated inquiries and shipments of distillate fuel oil this week. Refiners are receiving larger orders currently from contract customers that had been issuing instructions on their minimum commitments during earlier weeks of the winter. Most jobbers and distributors are ordering kerosene and other light burning oils for replacement of stocks that are turning over regularly with advent of colder temperatures. Residual fuel-oil demand is consistently strong, particularly from railroads in this section of the country. All railroad consumers are anxious to purchase beyond the maximum limits stipulated in contracts and as a result the Mid-Continent refiners have practically no residual fuel oil to offer on the open market.

Natural gasoline continues strong and manufacturers are shipping all current production and even depleting stocks in some instances in an effort to satisfy the demand. Shipments from the North Texas and Panhandle districts to the Gulf Coast continue unabated from the November level.

Fuel-Oil Market Improves In Eastern Seaboard Area

By J. P. O'DONNELL

NEW YORK, Dec. 15.—More seasonable weather has finally arrived in the Atlantic seaboard area and with it the long-hoped-for improvement in sales of heating oils, the turnover in which until now has been substantially below normal. Some oil companies estimated that so far during the heating season temperatures have been at least 15 per cent above normal.

The falling off in anticipated sales volume of burning oils, however, has been further aggravated by the fact that many consumers had stocked up to the limit during the winter when a shortage scare was current. Just recently a substantial proportion of this storage appears to have become depleted, and there has been a rush to replace it.

Ordinarily under such conditions heating-oil prices would be experiencing their usual seasonal betterment, but with real or implied federal price controls, there is little disposition on the part of East Coast suppliers to raise their postings. A few scattered and local price advances are reported to have been placed in effect for No. 2 fuel oil of 0.1 cent a gallon, but harbor prices have remained unchanged for the most part.

Meanwhile most suppliers continue to dispose of kerosene, No. 2 fuel oil and No. 6 fuel oil at regular posted or contract quotations, but a secondary market appears to have developed in northern New Jersey where increased costs are being reflected in higher prices on "pick-up" tank-wagon deliveries for No. 2 and No. 6 oil.

The spot market for heating oils has become virtually non-existent along the Atlantic seaboard especially since the active entrance of the United States into the war. Naval requirements for tanker tonnage are reported to have operated to restrict the number of vessels for free chartering. At least it appears difficult to obtain tonnage for cargo shipments for those who do not have their own boats. Although new tankers are coming off the ways at a fairly rapid rate, increased war needs for ships and oil give promise of some curtailment of tanker space for civilian oil in the near future, the trade reports. A shift of some tonnage to the Pacific Coast apparently is one of the more likely possibilities.

Motor Fuel Mixed

The market for gasoline in the East Coast area is active with demand well above previous records for the season. Despite this there is considerable weakness in the retail market. This was more or less expected as the summertime artificial barriers to price cutting, so characteristic of the industry, were relaxed. It must also be remembered that retail prices were advanced generally 1 to 2 cents per gallon in August. Present price wars in some areas have reduced retail prices by more than 2 cents, however. In one area gasoline which was sold a month ago for 21 cents a gallon at retail, tax included, now is moving at as low as 17.5 cents a gallon.

On the other hand, wholesale gasoline prices are firm. In this area service-station dealers are said to be generally paying 14.9 cents a gallon, delivered, including tax. The current market price for 72-74 A.S.T.M octane gasoline at New York Harbor continues firm at 8.5 cents a gallon in tank-car lots.

While most marketers in the East Coast area are opposed in principle to cutting the use of ethyl fluid in gasoline for civilian consumption, one organization already is reported to have prepared its marketing department for a reduction of about 30 per cent in the ethyl content of its motor fuel. Actual steps will of course await the official edict from Washington on the subject, which is momentarily expected.

General Price Outlook

East Coast oil suppliers, like the Southwest crude-oil producers, are marking time with respect to price policies pending the long-awaited decision from Washington with respect to the OPA general price policy. All price advances are being postponed for the time being despite the higher transportation, labor and other costs which are being experienced by most marketers.

Chief interest in the price structure here centers now in Bunker C fuel oil, quotations for which are believed by many suppliers to be out of line with current costs and with the generally tight supply situation experienced here. Despite the abnormally warm weather, East Coast suppliers have not been able to build up their inventories of this oil as much as they would have liked to and now with weather conditions more seasonable there appears no chance of adding to inventories for the remainder of the winter.

Several weeks ago it looked to many in the trade here as if the New York Harbor refinery price for Bunker C fuel oil would be advanced as of January 1 to $1.50 a barrel from the current rate of $1.35. Latest reports now indicate there may be a delay until at least February 1 in any decision on prices by the OPA. This would probably result in holding the quotation at $1.35 beyond January 1. Meanwhile contracts for sale of bunker fuel oil for delivery after January 1 are being made without mention of any maximum prices. This is disadvantageous to large consumers who have been accustomed to maximum price protection, as under present conditions they have no way of gaging their 1942 fuel costs, although the latter are a substantial factor in their budgets.

Depleted Stocks Curtail Gulf Coast Market Trade

HOUSTON, Tex., Dec. 15.—There was little change in the Gulf Coast refinery market the past week. Buying in the open market was still curtailed as the result of depleted stocks caused by lend-lease purchases.

Inquiries on diesel gas oils and gasoline continue to be received, but no material will be available until after the first of the year. No. 2 fuel was reported easier but the price remains unchanged at 4 cents. Kerosene continues tight with a limited supply on hand.

Residual fuels were being moved steadily although additional orders could be filled. Bunker C fuel is holding firm at 85 cents with cargo lots still quoted at 85 and 93½ cents.

There have been no important reactions from the recent reduction in tanker rates ordered by the Maritime Commission. Most of the marine traffic between the Gulf Coast and North Atlantic ports of the United States is handled in company-owned tankers or by boats that are engaged on long-term charters.

Gulf Coast refiners have prepared a report on costs of crude and other operating expenses that has been forwarded to Washington, D. C., as a part of the record to be considered by Leon Henderson, director of the Office of Price Administration, in his analysis of petroleum markets of the country.

Meanwhile, Gulf Coast refiners continued their work of filling lend-lease commitments and preparing for an expansion of demand during the first quarter of next year.

A.P.I. Weekly Refinery Statistics

Week Ended December 13, 1941

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	19,675,000	12,809,000	21,146,000	624,000
Appalachian	83.9	3,365,000	428,000	626,000	129,000
Ind., Ill., and Ky.	84.7	15,802,000	4,258,000	5,433,000	617,000
Okla., Kans., and Mo.	80.7	8,011,000	2,103,000	1,869,000	283,000
Inland Texas	63.4	2,413,000	1,242,000	464,000	147,000
Texas Gulf	91.2	13,167,000	8,153,000	6,920,000	985,000
Louisiana Gulf	95.3	2,619,000	2,348,000	1,636,000	167,000
N. Louisiana and Ark.	49.9	478,000	339,000	313,000	50,000
Rocky Mountains	50.1	1,161,000	322,000	134,000	44,000
California	90.9	15,331,000	62,585,000	12,693,000	566,000
Total reported	86.7	82,022,000	94,587,000	51,234,000	3,612,000
Est. unreported	.....	5,400,000	1,175,000	1,575,000	385,000
*Est. total	.....	†87,422,000	95,762,000	52,809,000	3,997,000
*Est. total previous wk.	.....	86,356,000	95,342,000	53,946,000	3,945,000
*Dec. 14, 1940	.....	81,411,000	103,318,000	45,198,000	3,495,000

*Bureau of Mines. †Includes 7,280,000 bbl. aviation gasoline.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ended December 6, 1941	244,200,000 barrels
Week ended November 29, 1941	242,884,000 barrels
Week ended December 7, 1940	261,652,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of December 13, 1941

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank wag.
Chicago, Ill.	16.1	14.1	4.5	10.3
Decatur	15.4	13.4	4.5	9.5
Joliet	16.4	14.1	4.5	10.3
Peoria	16.2	14.2	4.5	10.1
Quincy	13.4	12.4	4.5	10.0
Davenport, Ia.	16.2	14.7	4.5	10.1
Des Moines	15.9	11.9	4.5	9.8
Mason City	16.2	14.7	4.5	10.1
Duluth, Minn.	17.7	16.2	5.5	10.6
Mankato	17.4	15.9	5.5	10.3
Minneapolis	17.4	15.9	5.5	10.3
La Crosse, Wis.	17.4	15.9	5.5	10.3
Green Bay	17.7	16.2	5.5	10.6
Milwaukee	17.6	16.1	5.5	10.5
Detroit, Mich.	15.9	14.4	4.5	9.6
Grand Rapids	15.9	13.8	4.5	9.6
Saginaw	15.9	14.4	4.5	9.6
Evansville, Ind.	16.9	15.4	5.5	9.6
Indianapolis	17.1	15.2	5.5	9.8
South Bend	17.5	16.0	5.5	10.2
Fargo, N. D.	18.4	16.9	5.5	11.3
Huron, S. D.	17.8	16.3	5.5	10.7
Kansas City, Mo.*	14.9	13.4	4.5	9.4
St. Louis*	13.4	11.9	4.5	9.8
St. Joseph	15.7	14.2	4.5	9.6
Wichita, Kans.	14.8	12.7	4.5	8.0

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers. On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off, minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Sept. 18, 1941, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-149 gal., 7.5 cents; 150-399 gal., 7.5 cents; 400 gal. and over 7.0 cents; Stanolex fuel oil A, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents; 750 gal. and over, 5.25 cents. Stanolex fuel oil B, 1-99 gal., 8.0 cents; 100-399 gal., 7.0 cents; 400-749 gal., 6.0 cents; 750 gal. and over 5.25 cents. Stanolex Bunker C fuel oil, 1-399 gal., 6.5 cents; 400-999 gal., 5.5 cents; 1,000 gal. and over, 4.5 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Gasoline Dl-vided dlr.	Gasoline Inc. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Gasoline Net dlr.	Gasoline Inc. tax	Kero. tank wag.
Atlanta, Ga.	18.50	18.50	7.5	10.0
Augusta	18.50	18.50	7.5	9.5
Macon	18.50	18.50	7.5	10.0
Savannah	17.50	17.50	7.5	9.0
Birmingham, Ala.	19.00	19.00	8.5	9.0
Mobile	19.00	19.00	9.5	8.5
Montgomery	20.00	20.00	9.5	10.0
Jackson, Miss.	18.00	18.00	7.5	9.0
Vicksburg	17.50	17.50	7.5	8.5
Jacksonville, Fla.	18.50	18.50	8.5	8.0
Miami	18.50	18.50	9.5	8.0
Pensacola	19.00	19.00	9.5	8.0
Tampa	18.50	18.50	8.5	8.0
Lexington, Ky.	17.50	17.50	6.5	9.0
Covington	16.50	16.50	6.5	9.0
Louisville	17.00	17.00	6.5	8.5
Paducah	15.50	15.50	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank wag.	Gasoline Dlr. wag.	Gasoline Inc. tax	Kero. tank wag.
Atlantic City	13.5	14.0	4.5	7.9
Newark	13.5	14.0	4.5	7.9
Annapolis	14.85	15.35	5.5	9.7
Baltimore	14.25	14.75	5.5	8.7
Cumberland	15.65	16.15	5.5	10.2
Washington, D. C.	12.50	13.00	3.5	9.2
Danville, Va.	16.95	17.45	6.5	10.45
Norfolk	15.75	16.25	6.5	10.2
Petersburg	16.05	16.55	6.5	11.2
Richmond	16.05	16.55	6.5	11.2
Roanoke	17.25	17.75	6.5	10.7
Charles'n, W. Va.	17.55	18.05	6.5	11.5
Parkersburg	16.85	17.35	6.5	11.5
Wheeling	16.85	17.35	6.5	11.8
Charlotte, N. C.	18.40	18.90	7.5	9.5
Hickory	18.95	19.45	7.5	10.5
Mount Airy	18.80	19.30	7.0	9.7
Raleigh	18.15	18.65	7.0	10.5
Salisbury	18.45	18.95	7.5	10.9
Charleston, S. C.	17.25	17.75	7.5	(*)
Columbia	18.10	18.60	7.5	(*)
Spartanburg	18.80	19.30	7.5	(*)

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connections, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery: 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank wag.	Gasoline Dlr. wag.	Gasoline Inc. tax	Kero. tank wag.
Philadelphia, Pa.	14.0	15.0	5.5	10.15
Pittsburgh	14.5	15.5	5.5	10.5
Allentown	14.5	15.5	5.5	10.5
Erie	14.5	15.5	5.5	10.5
Scranton	14.5	15.5	5.5	10.5
Altoona	14.5	15.5	5.5	10.5
Dover, Del.	...	15.5	5.5	10.5
Wilmington	...	15.0	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck*	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank wag.
San Francisco	14.5	18.5	4.5	11.5
Los Angeles	14.0	18.0	4.5	10.0
Fresno, Calif.	15.5	19.5	4.5	12.5
Phoenix, Ariz.	18.5	22.5	6.5	12.5
Reno, Nev.	17.5	21.5	5.5	13.5
Portland, Ore.	17.0	21.0	6.5	13.5
Seattle, Wash.	17.0	21.0	6.5	13.5
Spokane	19.0	23.0	6.5	16.5
Tacoma	17.0	21.0	6.5	13.5

*Posted net tank-truck prices (including tax).

Resale and commercial discounts, effective October 1, 1941: Tank-car deliveries 0.25 cent a gallon off posted net tank truck. Commercial: Retail deliveries, and/or tank-truck deliveries of less than 40 gal., 4 cents per gallon above posted net tank-truck price for Standard Aviation, Standard's Supreme, and Standard Gasoline, and 3 cents per gallon above posted net tank truck for Flight Gasoline, except single deliveries of less than 40 gal. to marine trade only, which are billed at posted net tank-truck price.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Inc. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	11.0
Grand Junction	18.0	5.5	12.5
Pueblo	14.5	5.5	9.5
Casper, Wyo.	17.0	5.5	12.0
Cheyenne	16.0	5.5	11.5
Billings, Mont.	18.0	6.5	12.5
Butte	17.0	6.5	13.5
Great Falls	17.0	6.5	12.5
Helena	17.0	6.5	13.0
Salt Lake, Utah	18.5	6.5	14.5
Boise, Idaho	†20.1	6.5	16.5
Twin Falls	†21.1	6.5	17.0
Albuquerque, N. M.	*17.5	7.0	10.0
Roswell	*15.5	7.0	8.5
Santa Fe	‡18.0	7.5	10.0

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Texarkana, Ark.	14.0	5.5	6.0
Fort Smith	15.5	7.0	6.5
Little Rock	17.25	8.0	8.0
Muskogee, Okla.	15.0	7.0	8.0
Oklahoma City	15.0	7.0	8.0
Tulsa	15.0	7.0	8.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank wag.	Gasoline Dlr. wag.	Gasoline Incl. tax	Kero. tank wag.
New Orleans, La.	17.25	17.75	8.5	‡10.5
Baton Rouge	17.25	17.50	8.5	‡10.5
Alexandria	17.25	17.50	8.5	‡10.5
Lafayette	17.50	18.00	8.5	‡10.0
Lake Charles	17.50	18.00	8.5	‡12.0
Shreveport	17.00	17.0	8.5	‡9.0
Knoxville, Tenn.	20.00	20.50	8.5	12.5
Memphis	17.25	17.75	8.5	10.5
Chattanooga	19.00	19.5	8.5	11.0
Nashville	19.00	19.5	8.5	10.0
Bristol	18.25	18.75	8.5	12.0

Esso at dealer price less 0.5 cent per gallon to undivided dealers.

‡Includes 1-cent state tax.

Price basis to commercial consumers throughout Louisiana, Arkansas, and Tennessee: On single deliveries of 50 gal. or more at a time — posted consumer tank-wagon price. On single deliveries of less than 50 gal. at a time—posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price is the same as the posted dealer tank-wagon price, less 0.5 cent per gallon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Comm. tank wag.	Gasoline Dlr.* tank wag.	Gasoline Inc. tax	Kero. tank wag.
Albany	14.2	14.7	5.5	7.7
Met. New York	14.4	14.9	5.5	8.0
Buffalo	14.5	15.0	5.5	8.3
Rochester	15.1	15.6	5.5	8.8
Syracuse	14.8	15.3	5.5	8.7
Portland, Me.	14.6	15.1	5.5	8.1
Manchester, N. H.	15.6	16.1	5.5	9.0
Burlington, Vt.	15.2	15.7	5.5	8.3
Boston, Mass.	13.2	13.7	4.5	8.0
Worcester	13.8	14.3	4.5	8.1
Hartford, Conn.	13.9	14.4	4.5	7.6
New Haven	13.3	13.8	4.5	6.9
Providence, R. I.	13.3	13.8	4.5	7.8

*Undivided.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consuming price; accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank wag.
Omaha	17.9	15.4	6.5	9.8
McCook	18.5	15.9	6.5	9.5
Norfolk	18.4	16.9	6.5	10.3
North Platte	17.5	16.4	6.5	10.7
Scottsbluff	18.9	16.0	6.5	9.5

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Incl. tax	Kero. tank wag.
Dallas, Tex.	14.0	17.0	5.5	7.0
Fort Worth	14.0	17.0	5.5	7.0
Houston	14.0	18.0	5.5	8.0
San Antonio	14.0	18.0	5.5	7.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada

3-Star Imperial Gasoline

IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Gasoline Incl. tax	Kero. tank wag.
Halifax, N. S.	29.5	13.0	19.0
St. John, N. B.	29.5	13.0	19.0
Montreal, Que.	28.0	11.0	17.5
Toronto, Ont.	28.5	11.0	18.0
Hamilton, Ont.	28.5	11.0	18.0
Winnipeg, Man.	30.5	10.0	22.5
Brandon, Man.	31.0	10.0	23.0
Regina, Sask.	28.0	10.0	20.0
Saskatoon, Sask.	30.8	10.0	22.8
Edmonton, Alta.	28.9	10.0	20.9
Calgary, Alta.	26.0	10.0	18.0
Vancouver, B. C.	25.0	10.0	24.0

Selected Crude Prices

Most North Texas purchasers advanced their scale of posted prices in that area 3 cents per barrel effective at 7 a.m. December 11. The top price posted in the North Texas area is now $1.21 per barrel for 40° gravity crude and above. All schedules decrease at a rate of 2 cents per degree of gravity.

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Smackover, Arkansas, heavy	.83
Illinois basin	1.37
Pecos County, Texas	.95
Lance Creek, Wyoming	1.12
Bradford, Pennsylvania	2.75

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill Calif.	Oklahoma, Kansas	Gulf Coast, Texas	West Texas, Lea County, N.M.
18-18.9	$0.80	...	...	...
19-19.9	.84	...	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	...	1.07	1.30	.94
32-32.9	...	1.09	1.32	.96
33-33.9	...	1.11	1.34	.98
34-34.9	...	1.13	1.36	1.00
35-35.9	...	1.15	1.38	1.02
36-36.9	...	1.17	1.40	1.04
37-37.9	...	1.19	1.42	1.06
38-38.9	...	1.21	1.44	1.08
39-39.9	...	1.23	1.46	1.10
40 and above	...	1.25	1.48	1.12

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of December 13, 1941
(Most prices in cents per gallon)

The quotations are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.06
60 octane and below	.05125	.05375
60-62 400	.05	.06

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
63-66 octane	.0550	.05875
60 octane and below	.05	.06

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)	.05875	.06125
60 octane and below	.05	.05375

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055
60-62 400 grades:		
72-74 octane (regular)	.06	.0625
63-66 octane	.05625	.05875
60 octane and below	.0525	.055

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)	.0750	.0775
80 octane (1939 Research)		.0800

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.055	.0725
54-58 U. S. Motor	.055	.0625

EAST COAST (domestic)—

U. S. Motor (minimum 72 octane):		
New York (Bayonne)*	.08	.085
Philadelphia	.08	.0825
Boston		.085
Baltimore	.0775	.0825
Charleston, S. C.	.0725	.0775

*All grades of gasoline ½ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
80 plus (research)	.06625	.0675
72-74 octane (leaded)	.0625	.06375
70-72 octane (unleaded)	.0625	.0650
68-70 octane (unleaded)	.0625	.0650

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.05125
Grade 18-55	.06125	.0625

NORTH TEXAS—

Grade 26-70		.0475
Grade 18-55	.05625	.0575

CALIFORNIA—

75-85 375-390	.045	.05

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.0475

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p. 110-flash, 540-550 e.p.	.0375	.03875
41-43 gr., 300-320 i.b.p. 110-125 flash, 500-520 e.p.	.03875	.04
46-48 gr., 210-230 i.b.p. 480 max., e.p.	.04125	.0425

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

NORTH TEXAS—

41-43	.0425	.04625

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.04375	.04625

ARKANSAS (Ark. and N. La. del.)—

41-43	.04375	.04625

PENNSYLVANIA (inland refineries)—

46	.0625	.0650
45	.06375	.06725

CHICAGO (Based on Group 3)—

42-44	.0450	.0475
41-43	.04375	.04625

CALIFORNIA (Pac. Coast market)—

38-40 high-burning test	.045	.055

NEW YORK (Bayonne, N. J.)—

41-43		.053

GULF COAST (domestic)*—

41-43	.04	.04125

*Barge price ¼ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NORTH TEXAS—

No. 1 white (38-42)	.03825	.04125

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2 (32-36)	.0325	.035

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.0325	.035

CHICAGO (Based on Group 3)—

Range oil	.04	.0425
No. 1 white (38-42)	.03875	.04125
No. 2 straw (32-36)	.03625	.03875
No. 3 zero to 10 (28-32)	.035	.0375

NEW YORK (Bayonne, N. J.)—

*No. 1		.053
*No. 2		.052
*No. 3		.052

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

NORTH TEXAS—

No. 5, low pour point (18-22)	.80	.85
No. 6, 15 and above (10-16)	.80	.85

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

No. 5, low pour point (18-22)	.85	.90
No. 5, 15 and above (18-22)	.85	.90
No. 6, low pour point (10-16)	.85	.90
No. 6, 15 and above (10-16)	.85	.90

PENNSYLVANIA (inland refineries)—

36-40	.055	.05875

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.75	.85
10-16 (cargo lots)	.75	.85
12-17 (tank cars)	.65	.75
10-17 (high sulfur)	.55	.65
San Joaquin Valley:		
10-18 (tank cars)	.70	.85
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.80	.85

GULF COAST—

No. 2 fuel		.04
43-47 diesel		.04125
48-52 diesel	.04125	.0425
53-57 diesel		.0425
58-and-above diesel	.0425	.04375
Diesel bunkers		1.45
Bunker C (bulk cargoes)	.85	.90
Bunker C (bunkers)	.85	.90

NEW YORK (Bayonne, N. J.)—

27 plus gas oil		.053
28-30 diesel (lighterage 6¼c per bbl.)		2.15
28-30 diesel (tank cars)		.052
Bunker C (to ocean-going ships in N. Y. Harbor)	1.35	1.45
Industrial fuel (tank cars)		.044

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.27
150-160 D, 0-10		.23
150-160 D, 10-25		.225
120-125 D, 0-10		.225
120-125 D, 10-25		.22
Steam refined:		
600 dark green (untreated)		.145

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.305
15 pour point		.295
25 pour point	.25	.28
Steam refined:		
600	.15	.16
650	.155	.165
600 flash	.16	.175
630 flash	.17	.18

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.145
180-3		.15
200-3		.15
250-3		.165
280-3		.175
280-4		.17
300-3		.185
350-3½		.19
400-3½		.20
500-3½		.205
600-3½		.21
100-2½ paraffin oil 10-25		.0825
10-25 pour point:		
200-3		.145
250-3		.16
280-3		.17
280-4		.165

CALIFORNIA (moving to dom. mkt.)—

Pale oils:		
200-2½-3	.07	.0775
300-2½-3	.07	.0775
400-3-4	.0725	.08
450-3-4	.0725	.08
550-3-4	.0875	.1075
600-3-4	.0875	.11
Red oils:		
200-4-5	.07	.0775
300-5-6	.0725	.08
350-5-6	.09	.11
400-5-6	.09	.11
450-5-6	.09	.1125
500-5-6	.0925	.1125
600-5-6½	.0925	.1125
700-6½ plus	.0925	.1125
750-6½ plus	.0925	.1125
900-6½ plus	.0925	.1125

GULF COAST—

Pale oils:		
100-3	.0625	.0650
200-3	.0850	.0875
300-3	.09	.0925
500-3½	.0975	.10
750-3½	.10	.1025
1,200-3½	.1025	.10375
2,000-4	.1050	.1075
3,000-4	.1225	.1250

PENNSYLVANIA—

150 vis. at 70° F., 3 color, 400-405 flash:	
Zero pour point	.385
10 pour point	.375
15 pour point	.365
25 pour point	.31
200 vis., at 70° F., 3 color:	
Zero pour point	.405
10 pour point	.395
15 pour point	.385
25 pour point	.33

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.06

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale	.0625
124-126 (A.m.p.) w.c. scale	.0625

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax	.0560	.0640
128-130 (A.m.p.) wax	.0560	.0660
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.		.061
124-126 (A.m.p.) y.s.		.061
Petrolatum in barrels, carload lots:		
Dark green		.02875
Amber	.02875	.03125
Extra amber	.03125	.03375
Lily white	.04875	.05375
Snow white	.05625	.05750
Cream	.04125	.05250

Note: Most refiners are not quoting on wax pending interpretation of OPA order.

Export Prices

GASOLINE

GULF COAST—

60-62 400	.0550	.0675
61-63 390	.0575	.0650
64-66 375	.0575	.0650

LOS ANGELES—

U. S. Motor grades:		
Above 60 octane	.06	.0625
65-69 octane	.0575	.06
60-65 octane	.0525	.055

KEROSENE

GULF COAST—

41-43 water white	.0375	.04

LOS ANGELES—

41-43 water white	.05	.0525

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbl.)—

Cylinder stocks:		
600 S. R. unfiltered		.265
630 S.R. unfiltered		.27
600 flash, S.R.		.265
650 flash, S.R.		.27
Bright stock:		
Light, 25 pour point	.36	.37

NEUTRAL OIL

200-3 color	.43	.50
150-3 color	.41	.46

PARAFFIN WAX

NEW YORK (prices per bbl.)—

123-125 A.m.p.	.0560	.0625
125-127 A.m.p.	.0560	.0625
128-130 A.m.p.	.0585	.0650
133-135 A.m.p.	.0615	.0700
135-137 A.m.p.	.0640	.0700
Crude scale:		
124-126 w.s.		.061
124-126 y.s.		.061

EQUIPMENT PROGRESS...

Casing-Wall-Thickness Surveys Now Offered in Oklahoma

M. E. Tedford has opened offices for Dia-Loy Tubular Survey Co. at 915 Southeast Twenty-ninth Street, Oklahoma City, Okla., and is offering their tubing and casing-survey service to the Oklahoma area for the first time.

This service consists of running instruments to determine wall thicknesses of tubular goods. The Dia-Loy instruments have been proven accurate through nearly 2 years of service on the Pacific Coast. They are run on sand line to any depth while tubing is in hole, or special instrument is available for testing all sizes of tubing while lying horizontally on rack.

This survey service is particularly important at the present time because of the need to determine the condition of pipe before pulling old wells. It is also applicable in checking rod-worn tubing and preventing unnecessary wear.

Mr. Tedford has pioneered this service in California and will personally supervise the Oklahoma service company's operations.

TRADE LITERATURE

GENERAL REFRACTORIES CO., Philadelphia, Pa —A catalog giving a complete list of all the refractory products available today for modern industry's varied requirements. Approximately half the book is devoted to useful tables on actual use of various types of brick, and other tables essential to refractory users.

NORTON CO., Worcester, Mass.—"Grits and Grinds," the company house organ, which contains technological information in its November issue on the classifying of steel scrap by spark testing.

DAYTON RUBBER MANUFACTURING CO., Dayton, Ohio—A booklet, "The ABC's of V-Belts," showing uses, care and specifications of V-belts.

B. F. GOODRICH CO., Akron, Ohio—A new catalog section on Plastikon rubber putty. The section describes the properties of the product, lists the grades, gives directions for use and a large list of applications in which it has proved successful.

JOHNSON BRONZE CO., New Castle, Pa.—Catalog L-3, covering the line of Ledaloyl, self-lubricating bearings. Main purpose in issuing this new catalog was that it would serve as a guide to designing engineers. By standardizing on any of the more than 2,000 sizes listed, the purchaser can get good delivery and eliminates the cost of extra tools and dies.

BABCOCK & WILCOX TUBE CO., Beaver Falls, Pa.—Technical Bulletin 6-D, "Properties of Carbon and Alloy Steel Tubing for High Temperature—High Pressure Service," a complete revision and enlargement of the previous edition. It includes new data on physical properties and behavior in service of the B&W Croloys and other materials. New sections have been added on the B&W seamless-tube manufacturing process, rupture testing, maximum allowable working stresses, steel for subzero application, effect of hydrogen, and air-hardening properties.

LUMMUS CO., 420 Lexington Avenue, New York.—Bulletin R-6, showing by photographs, charts and description a large variety of petroleum refining processes and equipment, with many special unit and plants given in detail.

E. B. BADGER & SONS CO., Boston, Mass.—"A Century Ago," a booklet made up largely of excerpts from memoirs left by the late E. B. Badger, I, founder of the company, and published to commemorate the 100th anniversary of the firm. It contains valuable history on the city of Boston.

Welded Stainless Steel Tubing Presented by Globe Steel

Stainless steel tubing produced by a closely controlled electric welding process is now ready for production at the Globe Steel Tubes Co., Milwaukee, Wis.

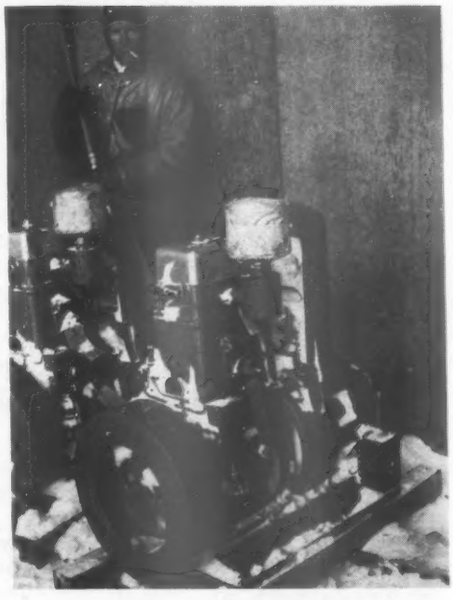
Developed after a long period of research and experiment with various welding processes, this new welded stainless steel tubing provides a high degree of corrosion resistance, strength with minimum weight, and uniformity of structure, according to Dr. H. K. Ihrig, director of laboratories of Globe Steel Tubes Co.

The method of welding the stainless strip is such as to result in a tube with very little flash, thereby reducing to a minimum the amount of grinding or cutting off of flash required to obtain a smooth finished tube. The structure of the weld metal very closely approximates the structure of the tube itself. The new tubing can be readily bent, coiled, swaged and formed.

Welded stainless steel tubing will be marketed under the trade name of Gloweld by the Globe Steel Tubes Co. Its resistance to corrosion and its strength at high temperature and pressure, comparatively lower cost, and other advantages will find ready acceptance as tubing for chemical and process industries, food industries, pulp and paper, oil and other industries where high corrosion resistance is a factor. Tubing of this type has already been successfully adopted in aircraft construction for hydraulic lines, structural and engine parts where the greater corrosion resistance of stainless steel is needed, coupled with its light weight and strength.

Gloweld will soon be available in a wide range of diameters and wall sizes and in practically all the stainless steel analyses. Globe Steel Tubes Co. has adopted Gloweld after a long period of research and experiment, drawing upon its many years of experience as a pioneer manufacturer of stainless steel tubing.

ANTARCTIC LIGHT PLANT



This photo shows a member of Admiral Byrd's Antarctic Expedition sweeping the snow from two Witte dieselectric plants, preparatory to setting them up in camp in Little America. Despite 'way-below-zero temperatures, these plants performed dependably day and night, providing power for lights, radio, communication and machine shops. They gave satisfactory service during the entire stay of the expedition in Little America, and were the only source of electric light and power in the far-off camp. These sturdy machines were produced by the Witte Engine Works, Kansas City, Mo., makers of diesel engines of various sizes for various uses in all industries.

CONTRACTOR BUYS DOUBLE-DRUM MOBILHOIST

Shown here is a very satisfied Cardwell customer taking delivery on a Cardwell double-drum Mobilhoist. He is Grady Chupp of Nacona, Tex., an oil-well servicing contractor (left), and young man at the right is Mr. McBride

Hose Couplings Made Swiftly With New Tool

A new method of clamping hose—whether rubber or fabric—has been announced with the introduction of the Universal hose tool.

The Universal bends the hose band around the hose, then by turning a small wheel and pushing forward, the band is clinched firmly, leaving a permanent, sturdy connection. The manufacturer states that in these three simple operations, hose couplings can be made in a few minutes.

The Universal hose tool is made in small and large sizes and is recommended for liquid, gas or air hose couplings. Full description may be had by writing for Bulletin HB-2, American Machine & Metals, Inc., East Moline, Ill.

OIL-SHOW SPACE RESERVED FOR FUTURE

The following agreement was accepted and approved by the unanimous consent of the exhibitors and directors of the International Petroleum Exposition in Tulsa on December 8, 1941, and has been submitted to all exhibitors for approval:

We, the undersigned, fully or partially paid up exhibitors in the International Petroleum Exposition originally planned for May, 1942, do hereby agree that:

If the Oil Show is postponed until some later date, whether agreed upon at this time or not, and in consideration of the fact that the Oil Show auhorities agree to maintain our individual priority for the use of space which we now hold, and that the Oil Show authorities also agree to maintain the plant in good condition and to keep together a skeleton organization, that the money which they hold for our account, if fully paid up, may be retained in full and at such time as an Oil Show is again held, we will pay for the use of our space in additional funds only that sum of money in direct proportion to the money held as has been spent for the above purposes of maintenance, etc.

In other words, if at the time that the next show is held it has cost 30 per cent of the total funds held to maintain the show, we agree to pay an additional 30 per cent for the use of the space.

Those of us who are not fully paid up and have accepted the partial payment plan, agree to pay up in full and accept the same basis as outlined above for fully paid exhibitors.

It is understood that those concerns who withdraw their money and do not go along on this basis will lose their priority for space location and their space can be sold to other exhibitors at any time between now and the next exposition, and further that those withdrawing from this plan and new exhibitors, will be assessed, in addition to the regular space cost, the same percentage of that space cost as those of us who now participate in the above plan.

AMONG EQUIPMENT MEN...

Kobe, Inc., Appoints Special Sales Representative

To facilitate the handling of sales and engineering problems in their greatly enlarged scope of operations, Kobe, Inc., manufacturers of the Kobe hydraulic pumping system, announced the appointment of R. A. Feemster as special sales representative for the Mid-Continent division.

Mr. Feemster became associated with Kobe in April 1941, as district representative in Oklahoma City. He brings to his new position not only a successful experience with the application of the Kobe pumping system, but a broad and varied background in oil-well pumping and drilling problems. After obtaining a B.S. degree in the school of petroleum engineering at Oklahoma University in 1932, Mr. Feemster was employed in the engineering and production department of Phillips Petroleum Co. for 2 years.

During the next 5 years he was variously associated with oil-field equipment companies doing creative work in subsurface drilling and completion projects. He will maintain his headquarters in the company's division office at Oklahoma City.

Fluid Packed Pump Names Advertising Manager

Lyle E. Kesselman, for the past 6 years Fluid Packed Pump Co. field representative in the Los Angeles Basin district, has been advanced to the post of advertising manager and head of the foreign sales department, according to an announcement by company officials.

Kesselman is widely known among California oil men. He first came to California late in 1920 to establish a branch plant for Kesselman & Co. of Butler, Pa. and Parkersburg, W. Va., an oil concern which has served the industry ever since 1875. Following the Santa Fe Springs activity in 1925, Kesselman entered the drilling and production phases of the oil business and has continued active in all lines ever since.

In addition to drilling his own wells, he gained wide experience in other firms as engineer, toolpusher and drilling and production superintendent in both California and Texas. His well-rounded oil career also includes some 2 years each in the technical and manufacturing departments of Shell and Associated.

Kesselman is author of a number of technical reports and articles dealing with production practices and development operations.

New Eastern Sales Manager Named by Buda Co.

The Buda Co., Harvey, Ill., announced the appointment of Ralph R. Hayes as eastern district sales manager. He will be attached to the New York office with headquarters at 253 West Sixty-Fourth Street, New York, N. Y.

Mr. Hayes is well known to trade on the eastern seaboard, especially to the marine and fishing industries. His experience includes 2 years as eastern engine representative for the Caterpillar Tractor Co., 5 years in the U. S. Department of Justice customs agency service; and 6 years as line construction officer of boats for the U. S. Coast Guard, Washington, D. C. He has served 6 years with the U. S. Navy and he holds a master pilot's license in both the United States and Canada. Mr. Hayes replaces Lew Crafts who recently resigned.

Merco Nordstrom Opens Offices on West Coast

San Francisco and Seattle have been selected as locations for new sales and engineering offices by Merco Nordstrom Valve Co. and Pittsburgh Equitable Meter Co. According to an announcement by Capt. A. E. Higgins, vice president, these offices have been opened as a part of the expansion activities of the two companies to give increased service on the West Coast.

Russ Waters has been appointed branch manager of the San Francisco office, 582 Market Street. He will be assisted by Fred D. Webster, R. L. Ford and Gilbert T. Bowman, who has for several years been in the Oakland plant.

The Seattle office will be under the jurisdiction of the San Francisco sales office. It has been established at 110 West Denny Way, out of which will work Frank P. Tangney and William R. Dominick. Hereafter, sales activities in the bay district will be directed from the San Francisco office instead of from the companies' plant at Oakland. H. Boezinger, vice president, is in charge of sales for the entire West Coast.

Oil Well Supply Changes Midwest Personnel

M. F. (Mike) Hazel, formerly district sales manager for Oil Well Supply Co. in East Texas, North Louisiana, and Arkansas, has been appointed assistant division sales manager with headquarters at Houston, Tex. He will supervise sales activities in Oilwell's Southwest Texas and Gulf Coast districts.

The latter is a new district, comprising the area formerly designated as the Houston district and the South Louisiana district. Mr. Hazel joined Oilwell in 1930 at the Oil City, Pa., manufacturing plant. In 1937 he was appointed district sales manager for West Texas with headquarters at Odessa, where he was located until he transferred to Shreveport, La.

Ralph H. Christy, formerly district sales manager of Oil Well Supply's Houston district, has been appointed district sales manager of the company's new and much larger Gulf Coast district. He will continue to make his headquarters at Houston, from which point he will supervise field and branch-store activities. Mr. Christy started with Oilwell in 1930 as manager of the Houston store.

Paul H. Shepherd, formerly district sales manager for Oilwell in the South Louisiana area, has been appointed district sales manager of the company's East Texas, North Louisiana, and Arkansas district with headquarters at Shreveport. Mr. Shepherd started with Oilwell in 1916 at the Winchester, Ky., store. He is widely acquainted throughout the oil industry.

Martin-Decker Establishes Canadian Sales and Service

J. E. (Johnny) Miller of the Service Engineering Co., Okotoks, Canada, has been appointed Canadian representative for the complete line of Martin-Decker drilling-control instruments, according to an announcement by Martin-Decker Corp., Long Beach, Calif. Miller will have charge of sales, installations and maintenance of Martin-Decker equipment used on Canadian wells.

BUSINESS NOTES

Purchase of all assets of Franklin Tool Co., which has been dissolved while Franklin Supply Co. has been organized, was announced in Mount Pleasant, Mich. The purchaser, Jene Harper of Mount Vernon, Ill., was one of the Franklin Tool Co. organizers in 1933.

Permutit Co. of Canada, Ltd., subsidiary of the Permutit Co., New York, N. Y., has recently appointed S. A. McWilliams, Ltd., 60 Front St. West, Toronto, Ont., as its representative in the Province of Ontario. Permutit Co. of Canada, Ltd. continues to be represented in Montreal by C. K. McLeod, and by Stanley Brock, Ltd., in Winnipeg and Calgary.

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY . . .

Patent Attorneys

PATENTS — TRADE MARKS

All cases submitted given personal attention.

Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees"—FREE.

LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
618 Bowen Bldg., Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES
PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years Experience
Inquiries Invited
B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

THE
OIL PROPERTIES EXCHANGE
For Sale: Many Producing Oil Properties, Royalties, Drilling Blocks, and Oil Investments of various sizes in Mid-Continent area. Contact us to Buy or Sell properties.
Alexander Bldg., Tulsa, Okla.

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

HAVE BLOCKED 25,000 acres on definite closed structure in Powder River Basin and need capital to further geologize and develop. Write or wire P. O. Box 1162, Casper, Wyoming.

FOR SALE: Oil and gas leases, small production, drilling propositions, fluorspar and rock asphalt deposits. Reports and maps furnished on request. W. P. Harley, Bowling Green, Ky.

PROVEN OIL STRUCTURE 10 miles long. Proven by drill and test; 33 ft. lime at 2,235 ft., 40 gravity paraffin base oil. At 3,953 another high gravity oil pay. 3 more oil stratas below: namely, 4,613, 5,255, and 6,406 ft. Can get around 3000 acres leases Reeves County, Tex. Address Lock Box 655, Pecos, Texas.

MICHIGAN—1,160 acres to lease for Oil and Gas. Map free. Owner: L. J. Meldrum, 8354 Epworth, Detroit, Mich.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Mailing Lists

ROYALTY owners, Oil investors, Unit holders, Stockholders, Operating personnel of oil industry. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Okla.

Business Opportunity

A LUBRICATING Oil and Grease business made 40% on selling price first nine months this year; will take $50,000 cash to handle. No debts. 10 year established business. Box A-742, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE
Revolutionary new lubricant for rubber parts of automobiles, fan belts, doors and a penetrant. Process license or in bulk. Crowe Chemical Co., 533 Mayo Bldg., Tulsa, Okla.

DRILLING and Producing Expert wants proposition from parties desirous of having leases developed on part cash and part working interest basis. I own complete Rotary Rig, power drive, tools, steel derrick, drill pipe, truck house, etc. Write full particulars for prompt reply. Box A-770, The Oil and Gas Journal, Tulsa, Okla.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

DEEDED ROYALTIES
State Oil & Gas Leases
Harry S. Wright, Farmington, N. M.
REGISTERED ROYALTY DEALER

FOR SALE: Royalty in N.W. ¼ Sec. 10-14n-3w. Surface also. Mary F. Williams, 320 E. Main, Edmond, Okla.

WE MAINTAIN A MARKET FOR
REGISTERED DEALERS
IN ALL TYPES OF OIL ROYALTIES

FIRST DEPENDABLE OIL CORP.
522 Fifth Ave., New York, N. Y.

112 ACRES royalty in 480 acres. 8 oil, 2 gas wells September paid $576.37, October $510.04, November $586.13. Three oil wells being completed in December other locations. 4 proven oil and gas sands in field. Price: $325.00 per acre. Oil $1.20 barrel, gas 5 cents thousand. Frank J. Hall, 703 Giddens Lane Bldg., Shreveport, La.

FOR SALE: One-half royalty under 160 acres in central Kansas, semi-proven, under short time lease by major company. Duerksen, 301 West 12th, Newton, Kans.

Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS
Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Geophysical Service

NEBRASKA OIL REPORT—Twice a month; scout and geological reports, leasing, maps, logs. Get sample copy. Geological Service Bureau, 1910 S. 11th, Lincoln, Neb.

Help Wanted

ENGINEER WANTED in central states refinery. Must be a college graduate in engineering and experienced in design and erection of petroleum refining constructions. Box A-731, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED
Instrument Engineer wanted for responsible position in oil refinery application work. Preferably qualified to analyze control problem from engineering flow plan, determine loads and pressure drops from process data, select proper equipment and specify for purchase. Knowledge of Foxboro, L.&N., Brown, Mason-Neilan and Taylor controls essential. Age approximately 26-30. Engineering degree required. Location New York City. Employment permanent. Advancement pending ability. Pay $250-$300 per month. Address reply to Box A-783, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

PETROLEUM ENGINEER, 29, Married, graduate of accredited Petroleum Engineering School, and Licensed Professional Engineer. Seven years' experience in drilling and production with major company. Desires permanent position as Petroleum Engineer, drilling or Production Superintendent. Box A-741, The Oil and Gas Journal, Tulsa, Okla.

FORMER Chief Engineer, active, in good health, desires position as operating or chief engineer of compressor station. For further information write J. R. Snyder, 324 Grant St., Buffalo, N. Y.

Financing

LOANS made on producing oil, gas and mineral lands. New York Note & Share Corp., 109 Broad St., New York City.

CAPITAL users: Through 270 adept-men you can submit issues. Cost less, get proof. Charles Thorp, 95 Broad St., New York.

Equipment Wanted

WANTED: One Horizontal Steel Tank 12' x 36' or Equal Capacity, ⅜" Plate. Box A-781, The Oil and Gas Journal, Tulsa, Okla.

FOXBORO Ratio Control; and 100 1-inch cast iron gas meters, like Sprague. Greenspon's National Stock Yards, St. Clair County, Ill.

HIGHEST cash prices paid for entire plants or individual production tools, milling machines, shapers, drill-presses, lathes, punch presses, electrical equipment and motors. Write us and a representative will call. COOK COUNTY MACHINERY CO., 1132 W. Lake St., Chicago, Ill.

For Sale—Equipment

FOR SALE: Direct to operators for cash. No brokers. Casing, line pipe, fittings, tubing, rods, tanks, pull machines, powers, service masts, engines. C. T. Boone, Emporia, Kansas.

MATERIAL—STOCK—AIR PLANT
Priced to sell—all or any part
1—Take off Pulley Miller Gas Engine to Overhead Line Shaft
1—165 HP Miller Gas Engine
1—Burt-Cross Air Filter
1—2½" x 14' Overhead Line Shaft Comp.
1—5½" x 2½" Air Tank
1—Wakesha Motor Radiator Frame
1—"10" Ingersoll-Rand Compressor
1—Manzel Lubricator
2—Blaw-Knox Tracifiers 3"
2—10½ x 4¾ x 12 Worthington Compressors.
2—Manzel Lubricators
1—Air Pump
1—5' x 5' Scrubber Tank
1—2" Nelan-Sch Gas Regulator
1—2" CF HP Gas Regulator
2—2' x 5' Making Tanks
1—80' x 30' Steel Frame Building. Located Seminole, Okla.
BOGE IRON & METAL CO.
800 S. St. Francis Ave., Wichita, Kansas

1—Condenser Box 24-0 x 10-0 x 6-0.
1—Condenser Box 30-0 x 8-0 x 5-0.
3—Condenser Boxes 30-0 x 10-0 x 5-0.
2—Tank Car Shells, 25-7 x 6-8, ¼" steel, 6500 gal. cap.
6—Tank Car Shells 25-6 x 6-8, ¼" steel, 6500 gal. cap.
Phone—Wire—Write
BROWN-STRAUSS CORPORATION
212 Colcord Bldg.
Oklahoma City, Oklahoma

3—Ingersoll-Rand High Pressure Compressors size 7¼" x 20". Attachments for Oil and Gas Horizontal Engines. Compressors are new, have never been used. Price $200.00 each.
1—Easton Cole & Burnham Pipe Machine, cuts 2½" to 8", 3 sets dies, Belt Drive. Price $500.00.
1—Oster, cuts 2½" to 8"; Price $250.00.
1—Oster, cuts ½" to 2". Price $100.00.
1—Jarecki, cuts ½" to 2". Price $125.00.
J. O. GRIFFIN COMPANY
2030 W. Main St., Springfield, Ohio.

FOR SALE: Model F-37 Fort Worth Spudder with Waukesha convertible gas diesel engine, 185 Horse Engine. Will either sell complete with or without string of tools with no cable. Box 2018, Phone 4548, Tyler, Texas.

FOR SALE: 125 H.P. 200 W.P. Broderick Boiler, Code Condition, $975. Melton Supply Co., Seminole, Okla.

3—125 HP, 250 W.P. Continental Boilers
2—66 HP Lucey Boilers, A-1 condition
3—Complete Power Rigs
Several rebuilt engines.
K. S. RICHARDS
Box 443 Phone 3-5600 Fort Worth, Tex.

FOR SALE
Large quantity of secondhand low pressure natural gasoline plant equipment and fittings. Includes boilers, absorbers, heat exchangers, preheater, Permutit water treaters, etc. For details and prices address Coltexo Corporation, P. O. Drawer 1562, Monroe, Louisiana.

FOR SALE: 2—1600 Bbl. bolted steel tanks with steel stairways. Write Box 1683, Wichita Falls, Tex.

FOR SALE OR RENT: Gas engine powered Rotary Drilling Rig complete. Suitable for 4,500' drilling. Box 1360, Phone 312, Seminole, Okla.

FOR SALE at Oklahoma City: A quantity of repaired and unrepaired duplex piston steam pumps, 6 x 4 x 6 and 10 x 3½ or 4½ x 10. Cities Service Oil Co., Bartlesville, Okla.

ONE LONGYEAR Core Drilling Machine, 2,500-foot capacity, 3-inch drill pipe, motor driven pump, complete ready for work. Box A-761, The Oil and Gas Journal, Tulsa, Okla.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30
4 Lines	1.40	2.40	3.40	4.40
5 Lines	1.75	3.00	4.25	5.50
6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
8 Lines	2.80	4.80	6.80	8.80
9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

CLASSIFIED DISPLAY RATES

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We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

CLASSIFIED ADVERTISING . . .

For Sale—Equipment | For Sale—Equipment | For Sale—Equipment | For Sale—Equipment

OFFERED FOR SALE—HURRICANE REFINERY—OVERTON, TEXAS

4500 Bbl. Crude Topping Furnace—77—4" OD by 3" ID Tubes—20' Long

Bubble Tower—6' Dia. by 47' High—13 Trays—15—18" Manways

2—150 H. P. Boilers—125 Lb. Pressure—Pumps—Motors—Vessels

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

FOR SALE: 1 — F-M 4" Centrifugal Pump and 10 h.p. 1200 rpm. motor. One Viking ET 4" high pressure rotary pump with 2¾ to 1 speed reducing gear. One 4" Worthington high pressure rotary pump. Miscellaneous lot pumps and electric motors with starters. One Kinney Model SD 866 rotary pump, 6" connections, on base plate with extended shaft, outboard bearing and tight pulley. Priced to sell.
CORKEN PUMP & MACHINERY CO.
206 E. Grand Ave., Oklahoma City, Okla.

---

25 K.W. and 40 K.W. Gas Engines, 220 volts. D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio.

FOR SALE at Crookston, Minn.: 17000 gal. oil storage tank, constructed of heavy plate steel. S. STEENERSON, Box 194, Crookston, Minn.

FOR SALE—One Thrift Hydraulic Pipe Pulling Outfit, in A-1 Condition, complete with 5", 6", 8" and 10" slips, mounted on truck. F. O. Wilkins, 201 Commerce Building, Mount Pleasant, Michigan.

1—Braun Cooling Tower.
1—50 H.P. Kewanee Locomotive Type high pressure steam boiler.
1—Steel Building 18' wide x 25' long;
1—25' wide x 46' long;
1—14' wide x 33' long; all steel bolted type with asbestos sheeting, steel sash and doors.
1—Parkersburg SC-11 Pumping Unit, stroke range from 60 to 132".

GREENSPON'S
National Stock Yards
St. Clair County, Illinois

PILE DRIVER

32 foot leads, 2000# drop hammer. Head block & sheaves. Hoist engine & boiler.

DRESSER ENGINEERING CO.
302 Okla. Natural Bldg.
Tulsa, Oklahoma

FOR SALE at Oklahoma City: Large quantity 65, 70, 75 and 85 hp. oil field boilers, repaired and unrepaired. Cities Service Oil Co., Bartlesville, Okla.

4,000 FT. practically new 2⅞" Hydril drill pipe. All or part. Box A-780, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE
STEEL BUILDINGS

Heavy Wisconsin Bridge and Iron 48 and 50' wide x 60—80—100 and 120' long. 16' side walls—18 & 22 Ga. Galv. Iron. Located at Madison, Wichita and Winfield, Kansas; Ada and Cushing, Oklahoma.

NATIONAL SUPPLY CO.
Tulsa, Oklahoma
Ph. 2-8101 **Box 1710**

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

HEAT EXCHANGERS

From

Rodessa Refinery, Shreveport, La.

1—Wyatt heat exchanger 5' 11½" long, 2' 5½" ID shell, 15/32" shell thickness; 627 ⅝" OD yellow brass tubes, 16 gauge, 6' 0" long, 585 sq. ft. surface.
1—THP heat exchanger 14' 6½" long, 1' 11" ID shell, ½" shell thickness; 184 1" OD steel tubes, 12 gauge, 15' 0" long, 710 sq. ft. surface. 500 lb. test pressure. Removable bundle.
1—Heat Exchanger 14' 0" long, 2' 7¼" ID shell, ⅞" shell thickness; 414 1" OD antimonial admiralty tubes, 14 gauge, 13' 6" long. 6 passes tube side, 1 pass shell side. 1460 sq. ft. surface.
1—Heat Exchanger 17' 7½" long, 2' 5" ID shell, 15/32" shell thickness; 400 1" OD antimonial admiralty tubes, 14 gauge 15' 7" long. 4 passes tube side, 1 pass shell side. 1710 sq. ft. surface.
1—Ross Drip-type Condenser 15' 7" high, shell 4' square, 1" shell thickness· 3000 ¾" OD admiralty bronze tubes; 16 gauge, 4' long. 2070 sq. ft. surface. 10 passes tube side, 1 pass shell side.

PRICED ATTRACTIVELY — AVAILABLE FOR IMMEDIATE DELIVERY

BROWN-STRAUSS CORPORATION

At (Cedar Grove) Shreveport, La.
Phone 7-7334
Leonard H. Strauss, Resident Engineer

Main Office: Kansas City, Mo.
L.D. Phone 169
Harry B. Strauss, Manager

Sucker Rods, once run, in Okla. City field. Complete stock ¾", ⅞" and 1", available in truck loads of 10,000 ft. or more. These rods all alloyed. Delivered at reasonable point. Stock carried at Oklahoma City and Wichita, Kan.

MIKE TRAVIS
1702 S. Boulder Tulsa, Okla.

GASOLINE STORAGE TANKS
Steel riveted horizontal — 7' x 30'
GILBERT PIPE & SUPPLY CO.
Electra, Tex.

30,000 Ft. good used 2" Tubing, 5⅛", 6¼", 6⅝", 8 and 10" casing. Daniel A. Moritz Co. Phone McKeesport, Pa.. 9191.

FOR SALE
3" Worthington Centrifugal Pump.
1—45 Star Drilling Machine complete.
1—49 Star Drilling Machine complete.
1—Complete Reda Pumping unit.
1—5' x 15' Smith Separator.
1—7½ H.P. Pumping unit with F. & M. Engine, unit is like new.
1—10 H.P. F. & M. Old style gas engine.
1—81' Lee C. Moore Tubular Derrick.
1—Group 6", 7" & 8" valves & fittings.
5½"—7"—8"—10" Lapweld Casing.
Vaughn S. Bryan Tulsa, Oklahoma
Beacon Building Phone 4-4111

FOR SALE: International Diesel Motor U.D.-18. Almost new, complete with outboard bearing, pulley and belts. Adair-Morton Company, Wichita, Kansas.

FOR SALE: 5 x 12 Oil Well Power Slush Pump with 100 H.P. Waukesha Motor. Melton Supply Co., Seminole, Okla.

FOR SALE—Two 470 H.P. National Transit Hor Gas Engines direct connected to 14½ x 36 Ingersoll-Rand Compressors. EMCO. Equipment Co., First Natl. Bldg., Oklahoma City, Okla.

FOR SALE
One Cooper 50 H.P. Direct Connected, Gas Engine Driven Air or Gas Compressor. Power Cylinder 13 x 16. Compressor Cylinder 13 x 16. This machine is complete and in good condition, and will be operated for inspection. Price f.o.b. Shreveport, Louisiana $550.00. Box A-790, The Oil and Gas Journal, Tulsa, Okla.

TRACTORS

Caterpillars, crawler type, size "35" $395; size "65" with nigger head winch $795.00; Austin Western hydraulic grader 10' blade $650. O. C. Evans, Mt. Sterling, Kentucky.

Valuation Service

REGARDING YOUR OIL investments including Stocks, Bonds, Royalties, Leases, Oil Lands, Appraisals & Statistical Reports. Southwestern Research & Administrative Corporation, Tulsa, Oklahoma.

Rocky Mountain Runs

WYOMING

	Bbl.
Salt Lake	14,580
Big Muddy	1,140
Badger basin	150
Byron	4,180
Cole Creek	910
Dallas Derby	400
East Mahoney-Ferris	190
Elk Basin	590
Frannie	3,120
Garland	1,510
Grass Creek	720
Hamilton Dome	950
Hudson	270
La Barge	2,910
Lance Creek	22,360
Lost Soldier	7,400
Mahoney	1,150
Maverick Springs	2,920
Medicine Bow	710
Mule Creek	410
Oregon Basin	8,810
Osage	500
Poison Spider	250
Quealy Dome	370
Rex Lake	60
Rock River	2,590
So. Casper Creek	480
Teapot	20
Wertz	5,290
Total Wyoming	85,260

MONTANA

Kevin-Sunburst	5,070
Cat Creek	460
Cut Bank	15,680
Dry Creek	440
Pondera	890
Total Montana	22,610

COLORADO

Iles Dome	1,470
Florence	100
Fort Collins and Wellington	290
Wilson Creek	1,620
Moffatt	300
Rangely	200
Tow Creek	130
Price	250
Hiawatha	530
Powder Wash	180
Total Colorado	5,070

NEW MEXICO

Arrowhead	4,300
Cooper	3,080
Eaves	920
Eunice	19,410
Halfway	390
Hardy	2,060
Hobbs	10,640
Jal	380
Langlie	3,880
Lynch	450
Lynn	1,080
Mattix	3,870
Monument	20,630
Penrose	3,130
Rhoades	480
Salt Lake	170
Skelly	1,720
South Eunice	2,850
South Lovington	1,610
Vacuum	14,130
West Eunice	600
Artesia-Maljamar	21,970
Getty	150
Hogback	200
Rattlesnake	240
Table Mesa	100
Total New Mexico	118,580

Tide Water Associated Acquires K.M.A. Properties

WICHITA FALLS, Dec. 16.—Perkins & Cullum, Wichita Falls independent oil firm, announced Wednesday the sale of properties in the K.M.A. field to Tide Water Associated Oil Co. for a sum "in excess of $1,500,000."

Included in the sale were the W. P. Ferguson 450-acre lease, Charles Pettit 571-acre lease, Mangold 280-acre lease and R. J. Bradley 179-acre lease. Tide Water had acquired a half interest in the leases 2 years ago.

Perkins & Cullum will continue to operate the leases temporarily for Tide Water.

Also announced was the sale of a half interest in one well in eastern K.M.A. on the C. Birk property with adjoining leases and a half interest in a block of wildcat leases near Burke Station in the vicinity of Wichita Falls.

Canadian Fields

(Continued from Page 81)

area is previously untested, and lies somewhat south of the Steveville field.

Manitoulin Drilling Planned

G. F. Gregory & Son of Petrolia, Ont., have a contract with a Winnipeg syndicate for further drilling on Manitoulin Island in Georgian Bay, to extend a shallow field opened by the Gregory firm in 1939. At that time several wells were drilled on the Marshall farm, Assiginack Township, securing a fair production of 40-gravity crude from the Trenton limestone around 440 ft. Some shipments have been made by boat, and recently a test shipment of crude in barrels by truck was made, via Sudbury and North Bay, more than 600 miles, to Petrolia. A drilling outfit has been shipped from Petrolia to Manitoulin for work in the field.

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